

# Outdoor mass gathering events and SARS-CoV-2 infection in Catalonia (North-East Spain)



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Mass gathering events are connected with the transmission of SARS-CoV-2, and preventive measures, including mask-wearing, social distancing, and vaccination, have been implemented and promoted worldwide. However, given the recent surges of COVID-19 cases driven by novel variants, it is crucial to re-examine the effectiveness of the existing preventive protocols against SARS-CoV-2 transmission. In this issue of *Lancet Regional Health – Europe*, Suñer et al. reported an observational study on the incidence of SARS-CoV-2 infection among attendees of two outdoor music festivals in Catalonia (North-East Spain) in July 2021.<sup>1</sup> The setting of this study is particularly interesting given the past epidemic waves in Spain, the availability of SARS-CoV-2 vaccines, and the emergence of the Delta variant at that time. Insights gleaned from this and related studies will provide evidence-based guidance regarding public policies for preventing future waves of COVID-19.<sup>2</sup>

Suñer et al. focused on two music festivals held in Barcelona and included all attendees of these events with available demographic data, SARS-CoV-2 antigen rapid diagnostic test (Ag-RDT) results, and vaccination information in the central health registry of the Catalan Health Service. The authors leveraged the same registry to build a matched population who did not attend any of these mass gathering events. They further conducted an anonymous online survey of attendees of the second event. Results show that the post-event 7-day cumulative COVID-19 incidence was significantly higher among attendees (4.14% and 2.42% among attendees of the two events, respectively; 1.69% and 1.10% among matched non-attendees; relative risk = 2.46 (95% confidence interval (CI): 2.16-2.80) and 2.19 (95% CI: 1.92-2.51) of the two events, respectively). They further

showed that previous SARS-CoV-2 infection, vaccination, and mask-wearing were associated with a lower risk of post-event SARS-CoV-2 infection.

This study has several strengths. First, leveraging data from the central health registry, the authors obtained crucial clinical information on participants of mass gathering events at scale. It would be more costly to achieve the same scale by conducting a randomized controlled trial on the same population. In addition, they identified a matched unexposed group using the registry data, which is an innovative approach that enables timely and extensive analyses of the target population. Results from this analysis support and expand findings from previous studies that examined earlier waves of the pandemic,<sup>3-5</sup> before community-wide SARS-CoV-2 vaccination and the emergence of the Delta variant.

Despite the compelling message from this study, a few open research questions remain. For example, the severity of the COVID-19 cases was not documented. This piece of information is crucial to evaluate the extent to which the observed increase in SARS-CoV-2 infection rate among music festival attendees is due to closer monitoring. In addition, the response rate of the survey (38%) is relatively low. Since participants who filled out the survey have different demographic profiles from those who did not, results related to the survey may not be conclusive. Furthermore, the landscape of the SARS-CoV-2 variants is constantly shifting. The Delta variant was the predominant variant in Europe at the time of this study, but the Omicron variant has become the most prevalent one in many regions since December 2021.<sup>6</sup> Omicron is showing signs of being more infectious than the Delta variant, being less detectable by some Ag-RDT tests,<sup>7</sup> and being more likely to cause breakthrough infections.<sup>8</sup> The optimal policies for preventing SARS-CoV-2 transmissions in the era of novel variants remain to be investigated.

In summary, Suñer et al.'s work showcased an intelligent use of health registry data to evaluate the relationship between mass gathering events and SARS-CoV-2 infection. Future research could build upon this study by employing electronic health records, insurance claims data, and geographic information systems to

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track the health impact of public gatherings. Such studies will expedite epidemiologic analyses, characterize the effectiveness of preventive measures implemented in each event, and provide real-time decision support regarding reopening<sup>2,9,10</sup> in the era of novel variants.

### Contributions

All authors contributed to the writing and editing of this manuscript.

### Declaration of interests

All authors declare no relevant competing interests.

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