

Developing a population data science approach to assess increased risk of COVID-19 associated with attending large sporting events.

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Objectives

To design and test a method to assess whether test events were associated with an increase in risk of confirmed COVID-19, in order to inform policy on the safe re-introduction of spectator events following decreasing incidence of COVID-19 and relaxing of restrictions.

Approach

We designed a cohort study to measure relative risk of confirmed COVID-19 in those attending two large sporting events in South Wales during May-June 2021. First, we linked ticketing information to records on the Welsh Demographic Service (WDS) and identified NHS numbers for attendees. We then linked attendees to routine SARS-CoV-2 test data to calculate incidence rates in people attending each event for a fourteen days period following the event. We selected a comparison cohort from WDS for each event, individually matched by age band, gender and locality of residence. Risk ratios were then computed for the two events.

Results

We successfully assigned NHS numbers to 91% and 84% of people attending the two events, respectively. Other identifiers were available for the remainder. Only a small number of attendees (<10) had a record of confirmed COVID-19 following attendance at each event (14 day cumulative incidence: 36 and 26 per 100,000, respectively). Background incidences in Wales over the same periods were 22 and 61 per 100,000, respectively. There was no evidence of significantly increased risk of COVID-19 at either event (event 1: 3.00 (0.18-47.9), $p=0.50$, event 2: 0.30 (0.04-2.34), $p=0.23$). However, event 1, which didn't include pre-event testing in their mitigations, had a higher risk ratio (>1) than event 2 (<1), which did include pre-event testing.

Conclusion

We demonstrate the potential for data linkage to inform COVID-19 policy regarding sporting events. At that point in the epidemic, there was no evidence that attending large sporting events increased risk of COVID-19. However, these events took place between epidemic waves when background incidence and testing rate was low.

