UK Health Security Agency

Mass Events, a COVID Pandemic and Public Health

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Events Research Programme (ERP)

- The ERP consisted of three phases.
- Phase 1 - 17th April to 15th May 2021
  - 9 pilot events, single/ multiple days, COVID prevalence 1:500- 1:1500
  - variety of indoor and outdoor settings
  - variations of seated, standing, structured and unstructured audience styles, cultural and sport activities, proportion of occupied venue capacity and a range of participant numbers.
  - based on event settings that would provide data and transferable learning that could be generalised across many settings.
- Phases II and III - 10 June to 25 July 2021.
  - COVID 7 day case rate c 43-543 per 100,000; Delta variant emerged
  - transmission risk as well as around the implementation and operational considerations of the findings from Phase I.
  - a particular focus on testing the NHS COVID Pass, and other certification of test results and vaccination status in real world settings.
  - further develop the scientific and analytical approaches from Phase I and to provide additional data that could be pooled across different events to increase statistical power to the evidence already generated.

ERP Phase Three

- Events staged 13th June – July 11th 2021
  - 8 Euros matches
  - 5 international cricket matches
  - All England Lawn Tennis Championships
  - British Open Golf
  - Goodwood Festival of Speed
  - Royal Ascot
  - Download Festival
  - The Grange Opera season

Transmission Risk

- Elite athletes
  - Players, associated essential sport staff (coaches, medical staff)
  - Essential support staff associated with the event (media team, site construction/ equipment management)
  - Travel associated
- Venue
  - Workers (hospitality, stewards, crowd management)
  - Spectators whilst in grounds, ingress and egress
- Wider Community
  - Travel associated
  - Social activity associated with journey (eating, drinking, pre-event activity)

Public Health Impact

- Direct
  - Transmission at the venue
  - Subsequent onward transmission
  - Transmission to others during travel, associated activity, etc
  - Workforce related with spread into the community
- Indirect
  - Impact on behaviour of the public through media coverage of the event

Covid Control Measures

- Outdoors by default
- Separation of “COVID secure bubbles” within the player groups
- Regular testing of players and workers at the venue
- Immunity by vaccination, recovery from recent infection, or a negative lateral flow test within 48 hours for spectators
- NHS App was used for checking
- Variable use of face coverings in outdoor settings and at structured indoor events
- Social distancing
- Variable capacity caps

Transmission studies

- Carbon dioxide monitors
- Video cameras and analysis of crowd densities and movement
- Routine surveillance systems to identify cases
- Contact tracing interviews
- self controlled case cohort studies to assess transmission risk

Methods

- NHS Test and Trace system to identify cases, contact tracing information provided online or in interviews
- Cases were included if they reported:
  - an activity which occurred within the date range of the ERP event.
  - the postcode reported for the activity undertaken matched a postcode (or postcode part) of the ERP event venue, or a keyword associated to location (e.g. "Ascot") appeared in the free text description.
  - The activity was reported in a category which was relevant to the ERP event (e.g. horse races), OR
  - The free text description contained a keyword relating to the event (e.g. "racing").

It is worth noting that location was match to vicinity where the event took place rather than a confirmation of attendance.

Methods (continued)

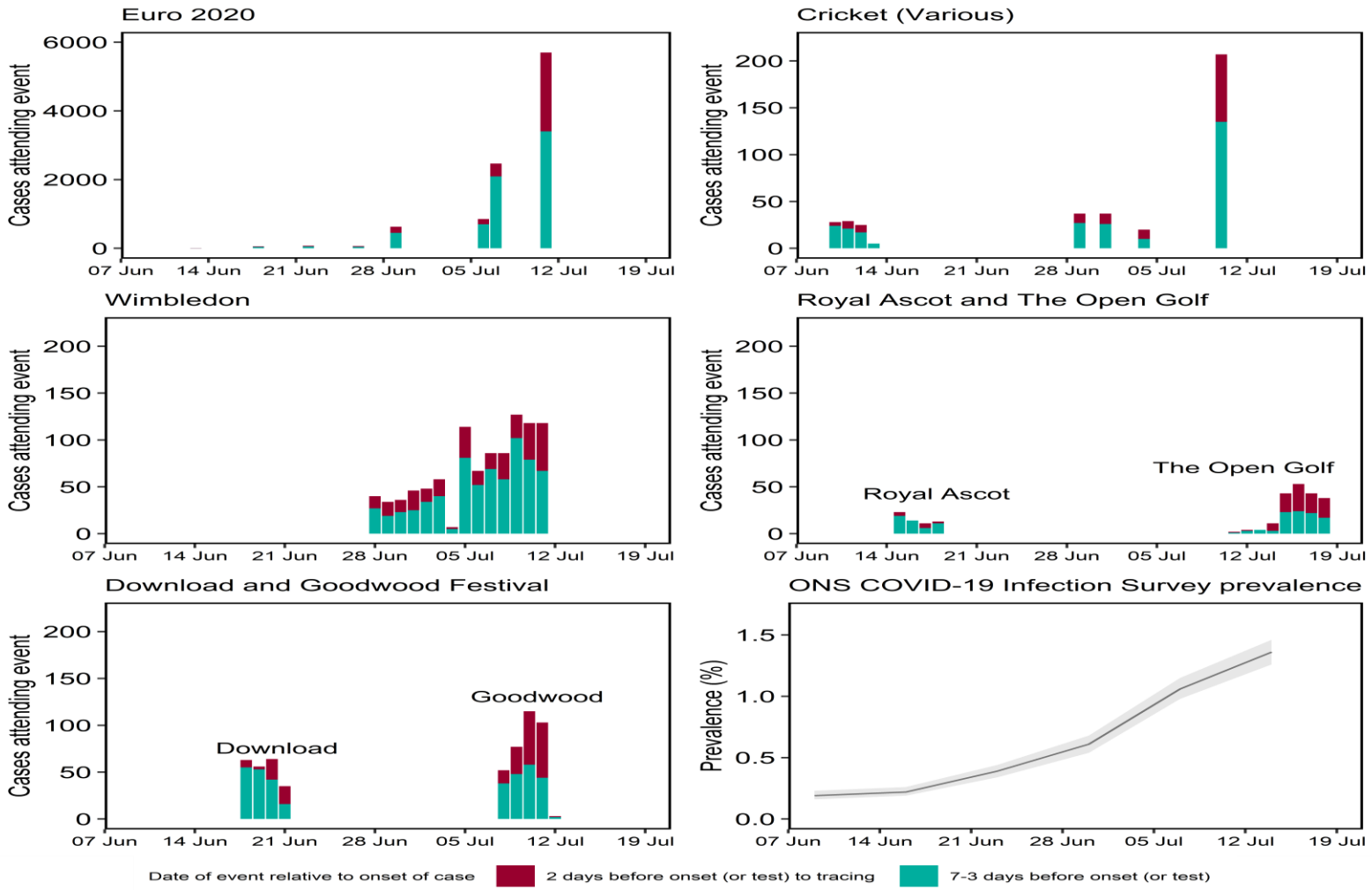
- Individuals were deemed to have attended an event whilst potentially infectious if :
  - they did so in the period from two days prior to onset of symptoms, or (if asymptomatic) test, onwards
- to have potentially contracted COVID-19 at an event if
  - they attended between three to seven days prior to the onset of symptoms or test

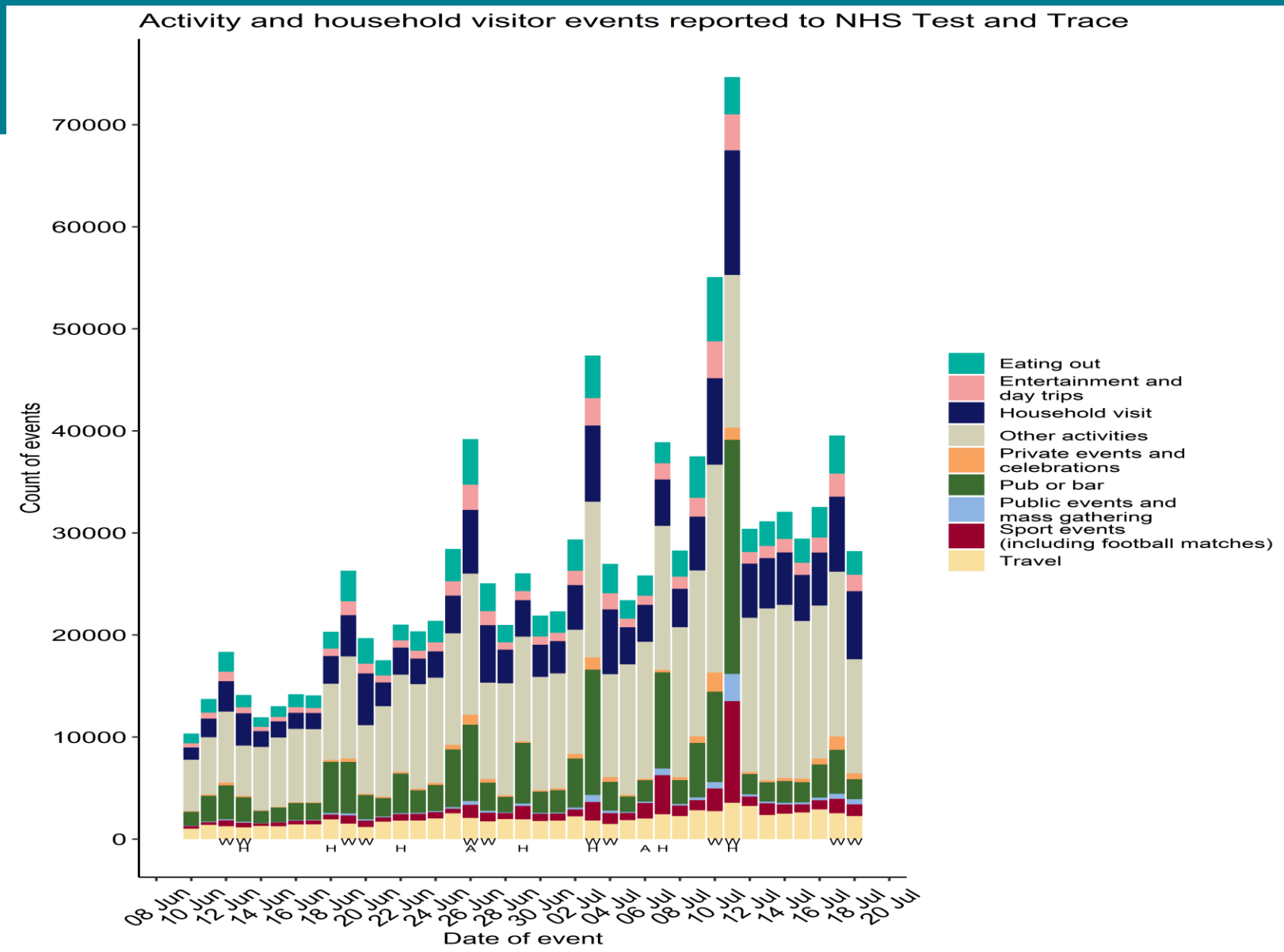
Cases associated with EURO 2020 and other ERP events in overlapping period by event

Date	Event	Cases 3-7 days before onset	Cases 2 days before onset	Total unique cases[1]
10/06 - 11/07	International cricket	253	123	374
13/06 - 11/07	Euros 2020	6376	3036	8772
15/06 - 19/06	Royal Ascot	39	11	49
18/06 - 21/06	Download Festival	65	52	105
28/06 - 11/07	Wimbledon tennis	582	299	855
08/07 - 12/07	Goodwood Festival	168	157	321
11/07 - 18/07	The Open Golf	64	100	159

1. Cases which attended both 2 days and 3-7 days before onset are counted once.

COVID-19 cases reporting attendance at an ERP




Activity and household visitor events reported to NHS Test and Trace
Count of events
70000
60000
50000
40000
30000
20000
10000
0
08 Jun
10 Jun
12 Jun
14 Jun
16 Jun
18 Jun
20 Jun
22 Jun
24 Jun
26 Jun
28 Jun
30 Jun
02 Jul
04 Jul
06 Jul
08 Jul
10 Jul
12 Jul
14 Jul
16 Jul
18 Jul
20 Jul
Date of event
Eating out
Entertainment and day trips
Household visit
Other activities
Private events and celebrations
Pub or bar
Public events and mass gathering
Sport events (including football matches)
Travel

Findings

- Both background prevalence and cases associated with ERP events increased during the period, at least in part attributable to the Delta variant
- Overall more male than female cases were associated with ERP events, but this varied by event
- Researchers reported stark differences in crowd behaviour across the events, and variable compliance with measures such as face coverings, shouting
- Carbon dioxide levels rose sharply as crowds formed at hospitality outlets, etc but ventilation could be modified to ameliorate
- cases associated with multi-day events increased as the events progressed; starkly so in the case of the Euros matches
- The Euros tournament had a disproportionate impact when compared with concurrent events

Challenges in assessing transmission

- Information governance across multiple organisations involved
- Ticket sale processes
- Attributing risk to an event - but not necessarily when or where transmission occurred
- Potential for gaming
- National surveillance systems are population and not event orientated
- Reliance on self reporting and (largely) symptomatic testing

Lessons from the Euros

- Public health impact is associated with activity associated with the event itself such as travel and social gatherings before and after
- Events of high national interest generate widespread community activity which occurs in less controlled environments
- Infection and transmission risk varies by spectator/participant demographic cohorts
- Impact on background population prevalence was short lived – but did lead to high workforce absence in the immediate period after the event

Acknowledgements

- **Public Health Impact of Mass Sporting and Cultural Events in a rising COVID-19 prevalence in England**

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