



# FIELDLAB

## EVENEMENTEN

Recommendation Request

REOPENING EVENTS

TYPE III

OUTDOOR, ACTIVE

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## Management summary

The main goal of the Fieldlab Events is to bring the events industry back to the old normal. Fieldlab is a joint initiative from the events sector, united in the EventPlatform and the Alliance of Events Builders and the Government. The programme is supported by the Dutch Ministries of Health, Welfare and Sport, of Education, Culture and Science, of Economic Affairs and Climate and of Justice and Security (*VWS, OCW, EZK and JenV*).

A research programme was developed in order to investigate the possibilities of organising safe events and collecting data to this end, whilst waiving the 1.5 metre measure. This programme focuses on four different types of events:

- Type I - Indoor events with a passive audience
- Type II - Indoor events with an active audience
- Type III - Outdoor events with an active audience
- Type IV - Outdoor events with an audience that can move around freely (festivals)

This distinction has been introduced so that generic recommendations can be made for the different types of events, taking air quality and visitor dynamics into account. In this document we present the data collected during the Type III pilot events of Fieldlab Events, i.e. the outdoor events with an active audience.

By means of the previously tested risk model developed for Fieldlab Events, a risk analysis was made for a visit to a Type III event.

In collaboration with our research partners, Radboudumc, BUAS, TU Delft, UTwente, TU Eindhoven and TNO and supported by parties such as Bureau Franken, Bureau Brandeis, BBA Binnenmilieu, Close and DCM, we have been able to collect relevant data and incorporate it into the risk model.

Based on our data and the risk model, we draw the following conclusions for Type III events.

With the right set of measures in place, Type III events can take place safely, even with high prevalence of SARS-CoV-2 or COVID-19. The maximum numbers as indicated in former versions of the roadmap should be revised with Fieldlab's recommendations. The generic measures, including the 1.5 metre distance, can be substituted within the location by pre-event or access tests and other recommended measures.

TuDelft's risk model indicates that the hourly risk at Type III events, during Fieldlab's pilots (measures and pre-tests) is equal to the risk in social situations at home or with a home visit (without a test).

The proposal is that Type III events can resume as soon as possible, even with a high prevalence, provided that the conditions of the following set of measures are met:

- Rapid test at a decentralised location, close to home
- Rapid test within up to 24 hours before the end of the event
- Use of an app or alternative entry check for a negative test result
- Attendance at the location limited to 50-75% capacity and consequently without the 1.5 metre measure from the regular RIVM framework within the event location
- Specific to football stadiums:
  - Occupancy of Business Seats can be on the same basis as regular grandstand sections, the Business Club (the indoor area for business visitors) can operate with a 20% maximum capacity, or in a specific setting that we outline in this document.
  - Due to the natural separation, so-called skyboxes can be used at 50-75% of the occupancy (just like regular grandstands).
- Use of group separation options based on the capacity and design of the location
- Use of a mask (covering mouth and nose) during the on-site movement phase at 50% occupancy, continuous use of mask during 75% occupancy
- Active communication with visitors, in order to share relevant information and to draw attention to compliance with the measures.

Based on the data collected and the risk model, we will demonstrate that with these measures, supplemented by the recommendations at the end of this document, Type III events do not present any additional risk of increasing the spread of the virus or hospitalisations. These measures are based on the building blocks as applied and described in the research approach entitled **Pilots for 'Low-Contact Events'** of Fieldlab Events.

Given the importance for the events sector, we now submit the findings and the recommendation request for Type III events. Based on the data from the other pilot events, we will make a similar request at a follow-up stage for the Type II and Type IV events.

We request that the Dutch ministries concerned consider this document with the results and the proposal and submit it to the Dutch Outbreak Management Team (OMT, advisory body for VWS) within the shortest possible delay, for it be assessed or to have it broadly evaluated and to go through the follow-up procedures, including the assessment of societal considerations and the consequences of implementation on a large scale.

Steering Committee and Programme Team

Fieldlab Events

## Type III events

This document relates to the events described in **Pilots for 'Low-Contact Events'** as Type III, Outdoor Active.

These are events (an outdoor concert or football match for example) that take place outdoors and where the spectators or visitors, enjoying the event, behave enthusiastically and exuberantly. This type of event is mainly experienced from one fixed place.

Three pilot events were set up to investigate the possibilities of organising this type of event in a safe, responsible, but also economically viable manner:

- 21 February – N.E.C. Nijmegen vs. De Graafschap, Goffert Stadium in Nijmegen
- 28 February – Almere City FC vs. Cambuur Leeuwarden, Yanmar Stadium in Almere
- 27 March – Netherlands vs. Latvia, Johan Cruyff Arena in Amsterdam

At the time of the pilots, the risk level was "very severe" with a prevalence of 200 to 250 per 100,000 in February and over 250 per 100,000 in March. The pilot on 27 March was a scale-up test for the findings of the first two pilot events.

## Demand for events

As the survey conducted in September 2020 already revealed, there is a strong demand for sporting events<sup>1</sup>. 97.1% of visitors to paid football matches in 2019 indicated that they wanted to visit another game in the new year.

Although the focus was limited to a relatively small target group of visitors to the club games of N.E.C. and Almere (clubcard holders of the club), there were more than enough people present in both cases for a representative survey. For the Dutch national team's match, the 5,000 available tickets sold out within a day. These results demonstrate how important (sporting) events are to society and that they are part of the essential necessities of life.

The visitors to the matches rated their experience at the event with an average of **8.7**, abandoning the 1.5 metre measure during the event is apparently not perceived as a problem and is rated with **8.9**. So people soon feel safe again within 1.5 metres.



### III. Buiten actief

Bezoekers zijn enthousiast, gezellig en uitbundig. Bezoekers hebben een toegewezen zitplaats en/of staan. Voorbeelden zijn een outdoor concert en een voetbalwedstrijd.

<sup>1</sup> See Appendix 1 – Survey results

## Safety measures

In order to make these pilots possible, a number of precautionary and safety measures were introduced, namely:

- PCR test beforehand, up to 48 hours prior to the event. For the Dutch national team's game this was replaced by a rapid test on the day of the match
- Triage questions
- Temperature readings
- Group size limitation
- Events logistics
- Rapid test on site (also logistics research) in 1:10 ratio for the first two games
- PCR post-test on day 5 after visiting the event. For the Dutch national team's game this was replaced by a rapid test on day 5 after the game
- Refrain from visiting vulnerable groups for up to 10 days after the event, or until in receipt of a negative test result after the test on day 5
- Exclusion of vulnerable groups
- Request installation of CoronaMelder app

In the pre-tests (PCR conducted at a maximum of 48 hours before the event or rapid test on the day of the event), approx. 0.41 % (29 visitors) of the participants tested positive. In addition, 1 participant was excluded from participation as the test returned as indetermined.

Event	Pre-tests	Positive	Indetermined	Post-tests	Positives	Rapid test
21-2	988	9	1	831 (84%)	3	90
28-2	1,045	2	0	858 (82%)	1	75
27-3	5,108	18		3,718 (73%)	3	Not applicable

There were no positive cases in the on-site rapid tests.

The (PCR) post-test was also introduced to gauge the visitor's willingness to be tested. The post-test was carried out among approx. 75% of the visitors afterwards.<sup>2</sup> The fact that this result was achieved, despite the fact that there was only one location available to the visitors at the stadium in February - for one half-day session – where they could undergo this test presents a very positive picture of the willingness to test.

In the pre-tests, 1.01%, 0.19% and 0.35% of people tested positive, respectively.

## Building blocks

As can be seen in the research plan drawn up for these pilots, research was carried out into the following building blocks for the pilots:

1. Behaviour
2. Triage, Tracking and Tracing
3. Visitor dynamics
4. Air quality
5. Personal protection
6. Cleaning and disinfection of surfaces and materials
7. Vulnerable groups
8. Rapid testing

<sup>2</sup> See Appendix 2 – test results Type III events

For each building block, we investigated how data can be collected that can contribute to improving the risk model.

## Behaviour

For this building block, we investigated whether people adhere to the prescribed measures.

### Research question

- Compliance regarding the question: "Does the visitor keep his/her mask on?"

*6 personen zonder mondneusmasker = 94,5% compliance*



### Result

In the setting where people were asked to wear a mask throughout the match, **94.5%** of visitors adhered to the instructions (this amounts to all but 6 individuals, as indicated above). Experiences suggest that active communication via the app used (Close App) prepared visitors well for the measures in place. Communication takes place by sharing relevant information with the visitors before, during and after the event, and asking the visitors questions.

### Recommendation

1. Given the high rates of compliance and acceptance during Type III events and pending the outcome of TNO and UTwente's aerosol dispersion studies, it is recommended that masks must be worn when moving around with a 50% occupancy rate and must be worn continuously in the case of a higher occupancy rate.

## Triage, tracking and tracing

For the building block of triage, tracking and tracing, the study focused on whether good triage could prevent people from coming to the event whilst contagious and how people with a positive test result afterwards can be found post event.

### Research questions

- Can we ensure that each visitor registers individually for source and contact research (BCO) afterwards?
- How can a health check based on RIVM triage questions take place most efficiently?
- What result does a temperature reading (37.5 degrees) have at the entrance?
- How large is the percentage of visitors who are refused entry to the event as a result of:
  - The pre-test (PCR/Rapid test) in the 48/24 hours before the event?
  - The results of the health check?
  - The rapid tests taken on site?
  - The temperature reading taken upon entering?

During the design of the Fieldlab pilot events, a number of focus areas were added:

- What is the legal framework for exchanging data for the purpose of BCO?
- What readings are important to test on-site infectiousness?
- Can we persuade visitors to install the Corona Melder app?

We deal with these aspects in the recommendations.

### Result

By setting up ticket sales and registration correctly, we ensured that we had contact details of all individuals. In principle, it is possible for one person to buy multiple tickets but these will then be personalised to enable communication on an individual basis. Adding an app (the Close App in the case of the pilots) to establish communication on an individual basis served to facilitate this. Respectively **94%**, **92%** and **96%** of visitors and staff installed this app.

- **95.1%** of all visitors to the football matches concerned installed the communication app
- **100%** of visitors are individually registered (including staff)

A health check based on the triage questions took place via the communication app four hours prior to the event. Due to privacy legislation, the data from the answers is not stored. The questions are repeated at the entrance. In both cases, no visitors are known to have cancelled on the basis of the triage questions.

- Health check by triage questions 0% cancellations at the entrance

Hand thermometers were used to conduct the temperature checks. No visitors with raised temperature were found.

- Based on the temperature readings, no visitors were refused entry

Cancellation rates based on:

- Pre-test: 30 out of 7,141 for all matches combined, **0.42%**
- Health check at the entrance: 0 people
- On-site rapid tests: 0 positive tests
- Temperature reading on entry: 0 people

## Recommendation

### Triage

2. Given the fact that the percentage of positive tests among asymptomatic visitors to Type III events amounts to 420 people per 100,000, which even slightly exceeded the incidence estimated by the RIVM, access tests prior to an event should be a requirement. During Fieldlab 1 to 8, PCR tests were used within 48 hours before the event, but also AG rapid tests (preferably with the least delay possible before the event, but a maximum of 24 hours before the end of the event would be a suitable replacement). These were first used in the game played by the Dutch national team and they are sufficient (OMT recommendation). An important consideration in this is the match planning. In the hypothetical case that the nine Eredivisie clubs with the largest capacity all play a home game on the same day, that amounts to 290,469 visitors, which is roughly 3/4 of the total test capacity.
3. In the customer journey, the triage questions at about four hours before the event work as a reminder to make an informed choice whether or not to travel. We recommend this as part of the communication with the visitor.
4. Triage questions at the event itself and temperature readings do not serve to detect infected persons. Rather, they are found to have a counterproductive effect, by causing congestion in the inflow of visitors and thus generating additional contact moments. Working with passive reminders seems sufficient in this respect.

### Tracking

5. Outside the scope of a research study, it is not permitted to track visitors for the purpose of a detailed BCO, in the event of a possible contamination.<sup>3</sup> We therefore recommend beginning with the separation options that locations naturally offer in order to be able to sub-divide into smaller groups within the proposed maximum capacity.
6. By making it clear to the visitor which subcategory he or she belongs to, the BCO can be limited to that subcategory in the event of a contamination and not all visitors need to be contacted.

### Tracing

7. A call to download the Coronamelder app leads to an increase from **57%** to **70%** of the visitors who have downloaded this app.<sup>4</sup> We would encourage this when communicating with visitors, in order to simplify BCO.
8. As a precautionary measure, another (PCR) test was carried out on day 5 after the Fieldlab pilot events. This resulted in 7 possible contaminations (including two notifications via the GGD), other positive indicators were found to be old infections based on BCO. Extensive BCO also registered that the sources of the contamination were located elsewhere<sup>5</sup>. Our recommendation is to discuss a protocol with the Dutch Municipal Health Authorities (GGD) that includes: Questions to the visitor about visits to events, including which "bubble/subcategory" a visitor belonged to. Check for CT values related to old infections.

<sup>3</sup> Research privacy conducted by Bureau Brandeis commissioned by Fieldlab Events

<sup>4</sup> Research data Close communication app

<sup>5</sup> Appendix 2 - Radboud UMC report – report test results Type III events

Events organiser offers local GGD to email visitors in support of BCO. The basis for this protocol has already been developed by GGD and Fieldlab Events in collaboration with RIVM and GGD Amsterdam. Events organisers must have appropriate means at their disposal to be able to contact visitors at the request of the GGD for BCO.

## Visitor dynamics

For this building block, the study focussed on how many contact moments are created when visiting a Type III event, and the duration and distancing involved. In order to be able to test different methodologies, a classification in bubbles was used, which looked at differences in:<sup>6</sup>

- Inflow and outflow processes
- Seating configurations
- Use of catering or Food and Beverages i.e. F&B

The study was conducted by BUAS, supported by Bureau Franken and video analysis supplied by DCM. Each visitor is equipped with an Ultra Wideband tag, to continuously record the distance from other visitors.

### Research questions

- How does the visitor arrive at his/her allocated seat?
  - How much contact is there with others?
  - Is everyone also in their own seat?
- What are the contact moments and what is the contact duration?
- What are the contact dynamics?
- Are the prevention measures working?
  - Routes and arrowing?
  - Does the stimulation of desirable behaviour work?

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<sup>6</sup> Annex 3 – Bubble classification at the time of the study

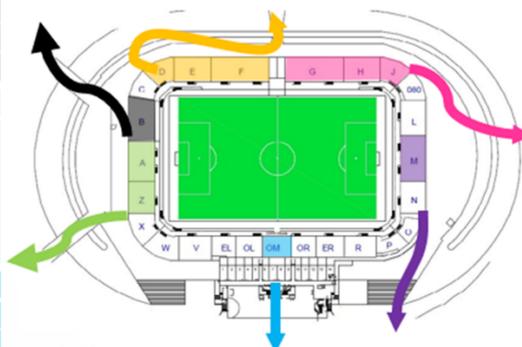
## Result

### N.E.C. vs. De Graafschap

The visitors were divided into six bubbles, the main features of which are shown here.

## N.E.C. – de Graafschap

<b>Bubbel 3</b>	<b>Uitvak – 125 p</b>
Mondkapje	Niet
Horeca	Gebracht
Zitplaats	Vrije stoel
Placering	Zelf regelen
Sneltesten	Nee
<b>Bubbel 2</b>	<b>Ron de Groot – 173 p</b>
Mondkapje	In beweging
Horeca	Vooraf – rust
Zitplaats	Vaste plek naast elkaar
Placering	Zelf regelen
Sneltesten	Nee
<b>Bubbel 1</b>	<b>Business – 146 p</b>
Mondkapje	In beweging
Horeca	Vooraf – rust – achteraf
Zitplaats	Vaste plek naast elkaar
Placering	Zelf regelen
Sneltesten	Nee



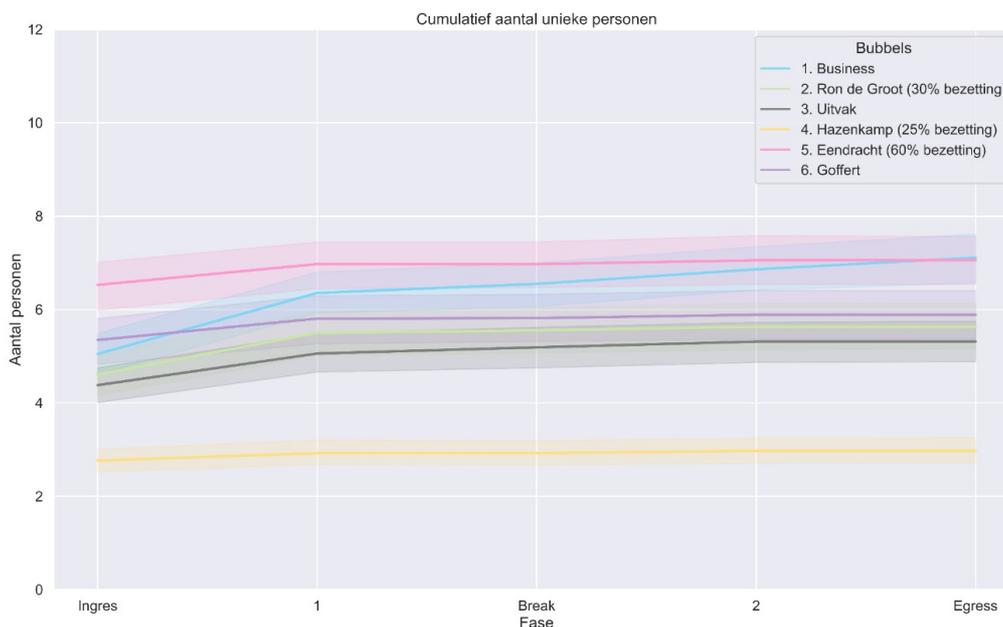
<b>Bubbel 4</b>	<b>Hazenkamp – 170 p</b>
Mondkapje	Niet
Horeca	Rust – tussentijds
Zitplaats	Dambord
Placering	Geplaceerd
Sneltesten	Nee
<b>Bubbel 5</b>	<b>Eendracht – 74 p</b>
Mondkapje	Continue
Horeca	Rust – tussentijds
Zitplaats	Naast elkaar
Placering	Geplaceerd
Sneltesten	Ja (deels)
<b>Bubbel 6</b>	<b>Goffert – 107 p</b>
Mondkapje	Continue
Horeca	Vooraf – rust
Zitplaats	Naast elkaar
Placering	Zelf regelen
Sneltesten	Nee



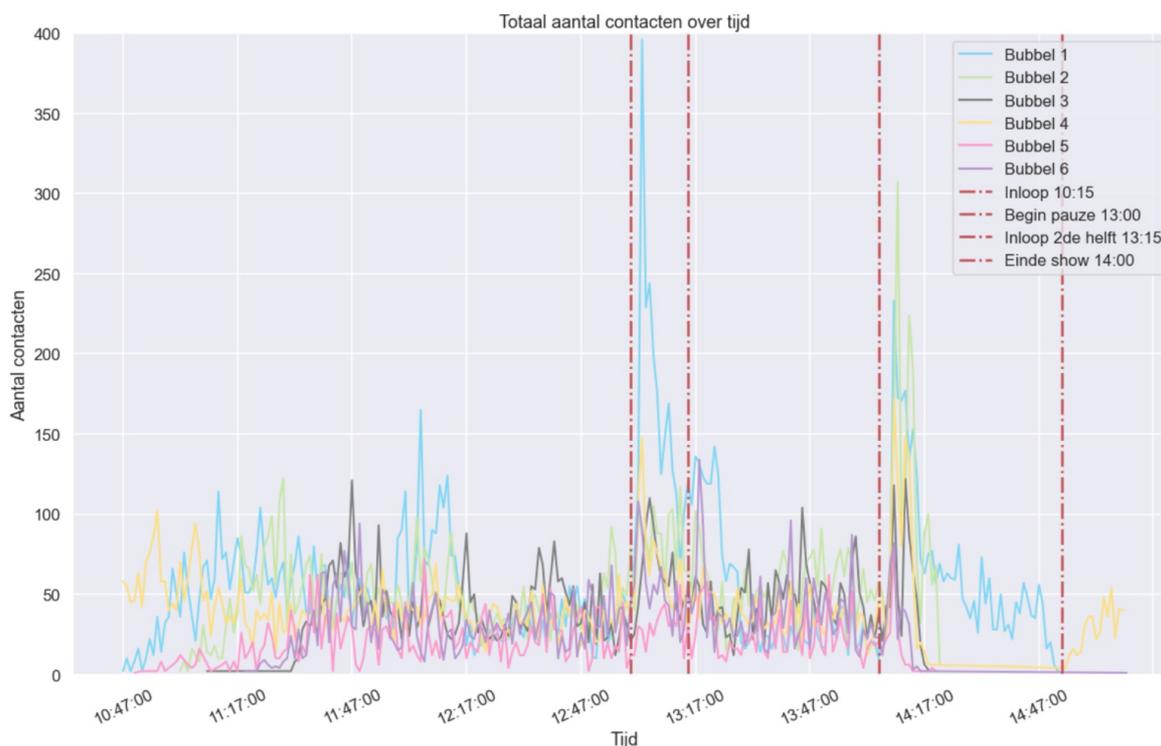
The table above:

<b>Grey:</b>		<b>Yellow:</b>	
<b>Bubble 3</b>	<b>Visitors' stand - 125pp</b>	<b>Bubble 4</b>	<b>Hazenkamp - 170pp</b>
<b>Mask</b>	<b>No</b>	<b>Mask</b>	<b>No</b>
<b>F&amp;B</b>	<b>Delivered</b>	<b>F&amp;B</b>	<b>Half-time - throughout</b>
<b>Seating</b>	<b>Free seating</b>	<b>Seating</b>	<b>Checkerboard</b>
<b>Usher</b>	<b>Self</b>	<b>Usher</b>	<b>Yes</b>
<b>Rapid test</b>	<b>No</b>	<b>Rapid test</b>	<b>No</b>
<b>Green:</b>		<b>Pink:</b>	
<b>Bubble 2</b>	<b>Ron de Groot - 173pp</b>	<b>Bubble 4</b>	<b>Eendracht - 74pp</b>
<b>Mask</b>	<b>When moving</b>	<b>Mask</b>	<b>Throughout</b>
<b>F&amp;B</b>	<b>Pre-match – half-time</b>	<b>F&amp;B</b>	<b>Half-time - throughout</b>
<b>Seating</b>	<b>Allocated, adjacent</b>	<b>Seating</b>	<b>Adjacent</b>
<b>Usher</b>	<b>Self</b>	<b>Usher</b>	<b>Yes</b>
<b>Rapid test</b>	<b>No</b>	<b>Rapid test</b>	<b>Yes (partially)</b>
<b>Blue:</b>		<b>Purple:</b>	
<b>Bubble 1</b>	<b>Business - 146pp</b>	<b>Bubble 4</b>	<b>Goffert - 107pp</b>
<b>Mask</b>	<b>When moving</b>	<b>Mask</b>	<b>Throughout</b>
<b>F&amp;B</b>	<b>Pre-match - half-time – post-match</b>	<b>F&amp;B</b>	<b>Pre-match – half-time</b>
<b>Seating</b>	<b>Allocated, adjacent</b>	<b>Seating</b>	<b>Adjacent</b>
<b>Usher</b>	<b>Self</b>	<b>Usher</b>	<b>Self</b>
<b>Rapid test</b>	<b>No</b>	<b>Rapid test</b>	<b>No</b>

The average number of longer contacts (> 15 minutes cumulative) at short distance (<1.5 metres) that the visitors to the match had is indicated below per bubble.



What is striking is that there is little to no difference between the bubbles<sup>7</sup> with the exception of Bubble 4, where the people were seated in a checkerboard configuration.



*Almere City F.C. vs. Cambuur Leeuwarden*

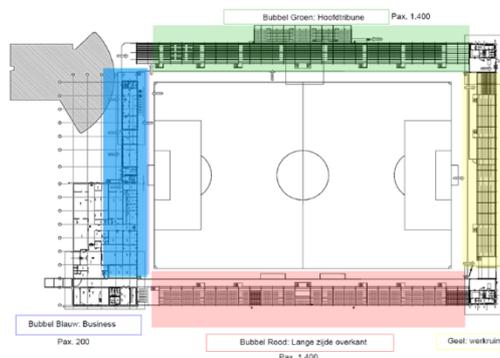
<sup>7</sup> See Appendix 3 – Bubble layout

The visitors were divided into three bubbles, the main features of which are shown here.

## Almere – Cambuur

<b>Bubbel 1</b>	<b>Business – 170 p</b>
Mondkapje	Continue
Horeca	Vooraf – rust – achteraf
Zitplaats	Vaste plek naast elkaar
Sneltesten	Nee

<b>Bubbel 2</b>	<b>Hoofdtribune – 380 p</b>
Mondkapje	Continue
Horeca	Continue, zelf halen
Zitplaats	Tussenstoel
Placering	Door stewards, aanschuiven in rij
Sneltesten	Nee



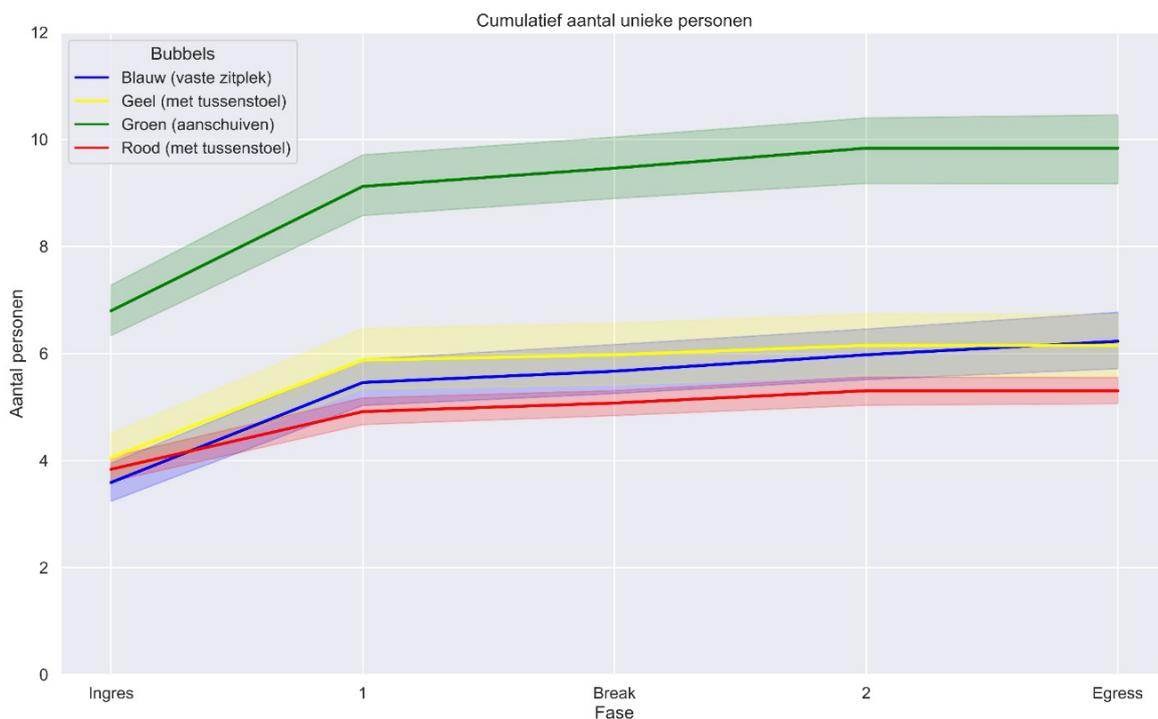
<b>Bubbel 3</b>	<b>Lange zijde overkant – 347 p</b>
Mondkapje	Niet
Horeca	Continue, bezorgd
Zitplaats	Tussenstoel
Placering	Door stewards, per gezelschap
Sneltesten	Deels (81p)



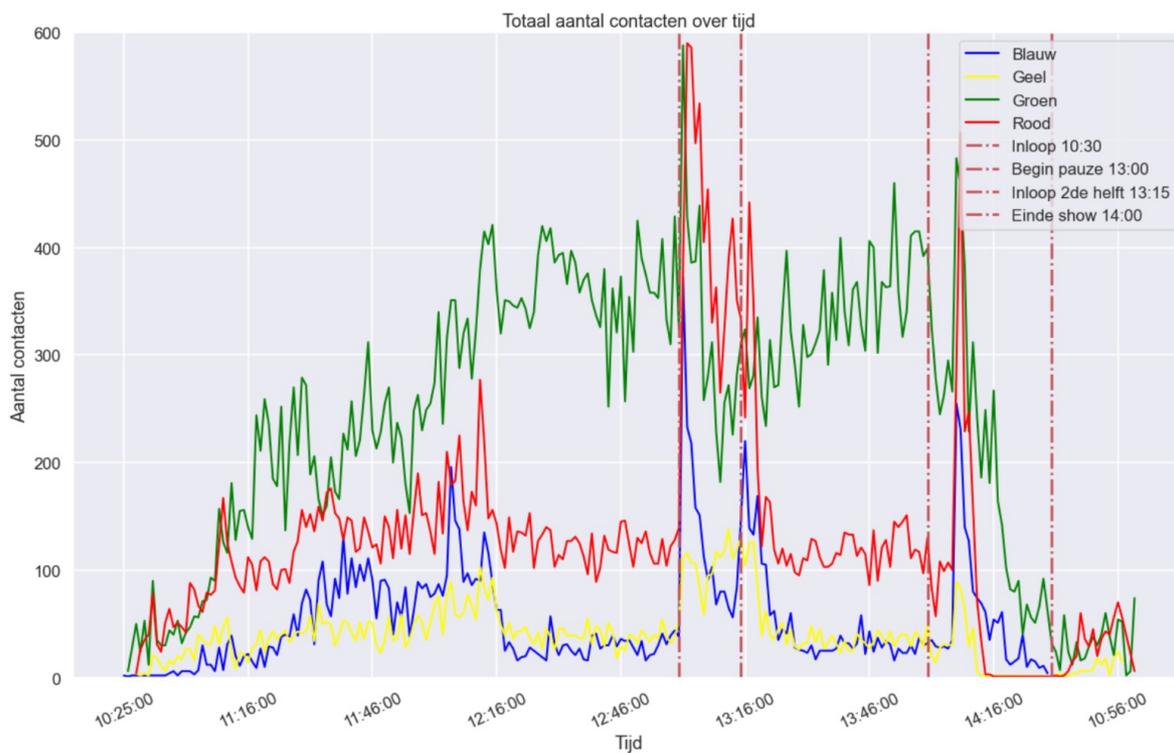
The Table above:

<b>Blue:</b>	
<b>Bubble 1</b>	<b>Business - 170pp</b>
<b>Mask</b>	<b>Throughout</b>
<b>F&amp;B</b>	<b>Pre-match – half-time – Post-match</b>
<b>Seating</b>	<b>Allocated, adjacent</b>
<b>Rapid test</b>	<b>No</b>
<b>Green:</b>	
<b>Bubble 2</b>	<b>Main stand - 380pp</b>
<b>Mask</b>	<b>Throughout</b>
<b>F&amp;B</b>	<b>Throughout, self service/collection</b>
<b>Seating</b>	<b>One alternate free seat</b>
<b>Usher</b>	<b>By stewards, form queue</b>
<b>Rapid test</b>	<b>No</b>
<b>Pink:</b>	
<b>Bubble 3</b>	<b>Long stand opposite - 347pp</b>
<b>Mask</b>	<b>No</b>
<b>F&amp;B</b>	<b>Throughout, delivered</b>
<b>Seating</b>	<b>One alternate free seat</b>
<b>Usher</b>	<b>By stewards, per group</b>
<b>Rapid test</b>	<b>Partially (81pp)</b>

The average number of longer contacts (> 15 minutes cumulative) at short distance (<1.5 metres) that the visitors to the match had is indicated below per bubble. (Yellow and Red were merged after Yellow had undergone a rapid test).

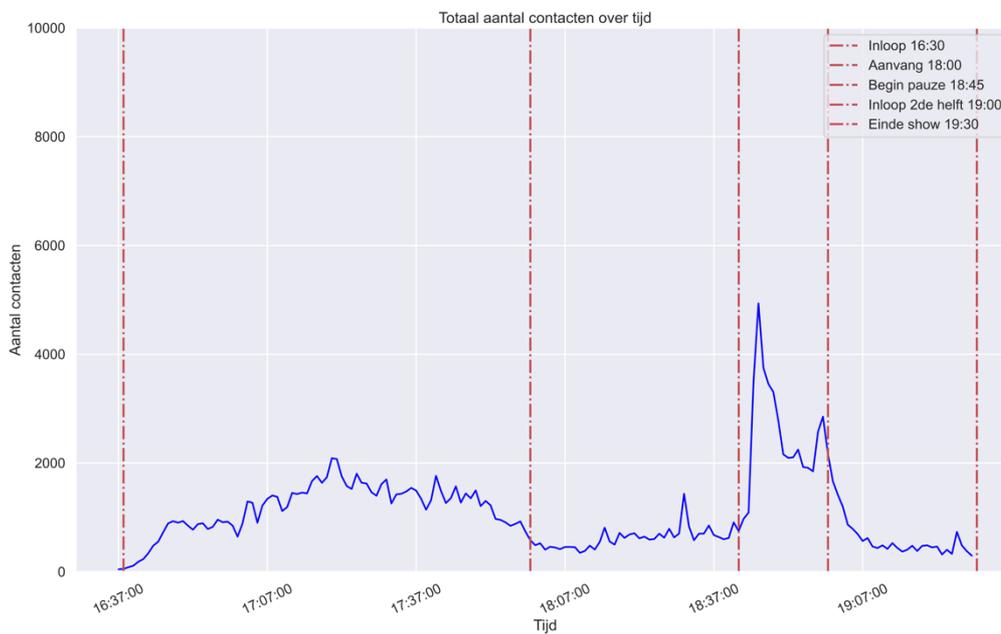
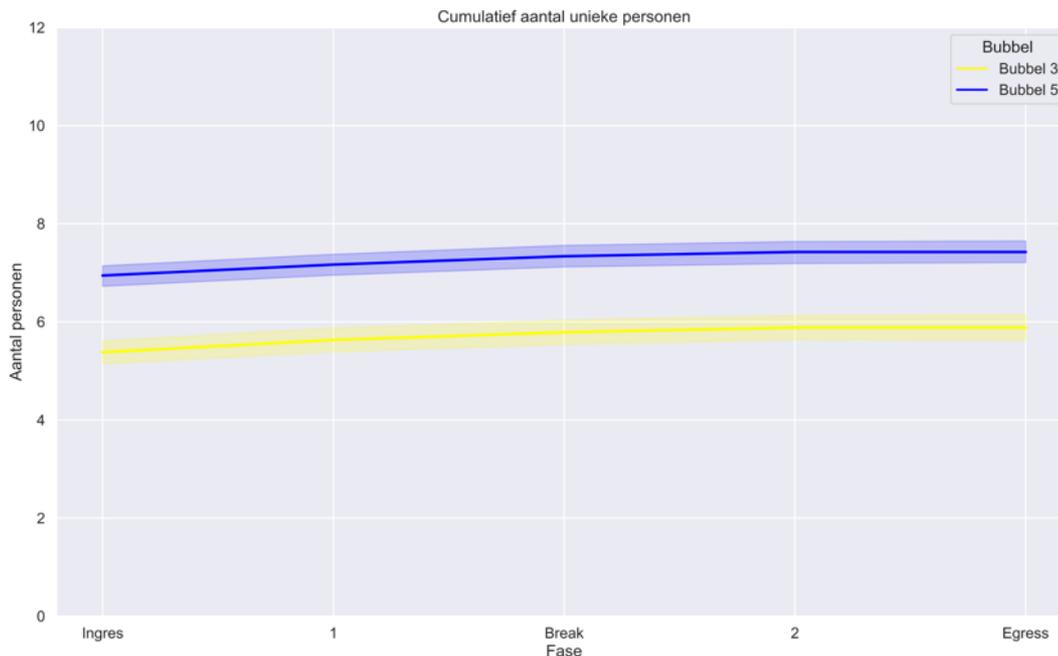


What is striking is that there is little to no difference between the bubbles with the exception of the Green bubble, where the inflow clearly led to more contacts.



*Dutch National Team*

The visitors were divided into nine bubbles, two of which were equipped with tags. This was done to conduct a scale-up test at 50% and 75% occupancy.



It is apparent that the number of contacts increases at half-time, whereas with the other matches it is specifically as the kick-off is imminent that there is a significant increase.



## Air quality

For this building block, the focus of the study was on how visitors influence the aerosol dispersion and air quality during the international match in the Johan Cruyff Arena. The research was conducted by TU Eindhoven.

These results are not yet sufficiently known for them to be included in this recommendation request.

## Personal protection

For this building block, the research focused on the effect of a mask on the event experience and the impact on the emission and inhalation of aerosols in an event environment. The research was conducted by BUAS, DCM looked at compliance and experience. Research into aerosol dispersion by TNO.

Research questions

- What is the visitor experience of wearing a mask?
- Use of disinfection at entrance and impact on flow?

Result

### Mask

The effect of masks was not measured, this is currently being studied in a TNO laboratory setting. However, the visitor experience of wearing a mask was investigated.

Different variants were used in the bubbles. One bubble wore the mask throughout the stay, the other bubble only wore it when moving around.

	Very negative	Negative	Neutral	Positive	Very positive
Entire stay	5%	30%	50%	12%	3%
On the move	2%	13%	64%	18%	3%

### Disinfection

For smaller locations with fewer visits, the use of disinfection is 100% enforceable by using an entry procedure making this mandatory. However, this results in a delay at the entrance and can lead to additional contact moments when entering the event.

### Face shield

The survey conducted in September 2020 by Radboudumc found that 49% of visitors turned down the face shield, while 76% accepted the mask as an option. That is why we have not included the face shield as an option.

## Recommendation

12. Based on the results, we recommend that disinfectants be made available at the entrance of the event and at various locations in the building. However, due to the flow and chance of increasing contact moments, we would not make this mandatory at, for example, the entrance of the building.

## Cleaning and disinfection of surfaces and materials

No research was conducted on this subject in the Type III pilots.

## Vulnerable groups

Vulnerable groups were excluded from participating in Type III events. However, this is the type of event that the 70+ age group would normally attend.

### Recommendation

13. In view of the fact that it is not yet 100% certain whether a vaccinated person can still transmit the virus, we recommend that a test also remains a requirement for vaccinated persons.
14. As long as a person from a high-risk group has not been vaccinated, we advise him or her to exclude him-/herself from attending events with high prevalence.

## Rapid testing

For this building block, a percentage of visitors are subjected to a rapid on-site test to analyse the logistics of testing. This investigation was carried out by the Rapid Testing Task Force (VWS). A comprehensive report can be found in the final report prepared by the Task Force<sup>8</sup>. During the match of the Dutch national team, 100% of the visitors were subjected to the rapid test, replacing the PCR test.

### Research questions

- Is the rapid test logistically deployable?
- Are there any discrepancies between rapid test results and negative PCR tests?
- How do visitors respond to the test and any positive test results?

### Result

The deployment of on-site rapid testing is only limited. Due to the fact that people have to keep a distance of 1.5 metres until the moment the result is known, the majority of locations can only use this option on very limited scale.

An additional disadvantage is that visitors have already travelled to the location when their rapid test is carried out. In the event of a positive test, they must make the return journey home before going into quarantine.

The rapid test results did not yield any positive tests and therefore this did not deviate from the PCR tests carried out 48 hours earlier.

The people who had to undergo a rapid test rated it with an 8.9. The sense of security is clearly appreciated. Almost 9 out of 10 visitors to the matches are willing to have themselves retested in advance for each event, with a clear preference for a rapid test.<sup>9</sup>

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<sup>8</sup> See Appendix 4 – Final Report Rapid Testing Task Force

<sup>9</sup> For both results, see Appendix 1 Survey Results Radboudumc

## Recommendation

15 Based on the results, we recommend the decentralised organisation of rapid tests. It must be possible for the visitors to be tested as close to home as possible. An important reason being the avoidance of unnecessary travel in the event of a contamination. The capacity can also be more evenly spread and this does not affect the logistics or visitor flows at the event location.

16 We recommend rapid test facilities on site or in the immediate vicinity, so that in extreme cases there is an opportunity to test someone who has to enter the event unexpectedly, or should the result be unavailable. Based on Track 2A, this rapid test capacity combined with the controlled environment of a Type III event would soon create an opportunity for these events to resume.

## Risk analysis model

Ultimately, the research in the pilots of Fieldlab Events revolves around answering the main question: "How do we reduce the residual risk that arises from events?"

### Impact of building blocks on risk

TU Delft has developed a risk analysis model for this purpose, which answers this question on the basis of the building blocks. To this end, the impact of the building blocks on contamination risk and hospitalisation risk per hour was initially compared to the BCO setting 'at home'.<sup>10</sup>

### Result

The risk model highlights the impact of the building blocks and measures taken during the events on the risk of infection and hospitalisation per hour. Where there is a significantly higher risk at an event without measures, it has been found that the risk at the test event is almost equal to the BCO setting at home.

The greatest impact is achieved by a validated rapid test, with added value of intelligent design and logistics of the event, enabling good inflow and outflow, and adequate ventilation or fresh air.

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<sup>10</sup> See Appendix 5 – TU Delft Risk Model

## Risk ratio of Type III events

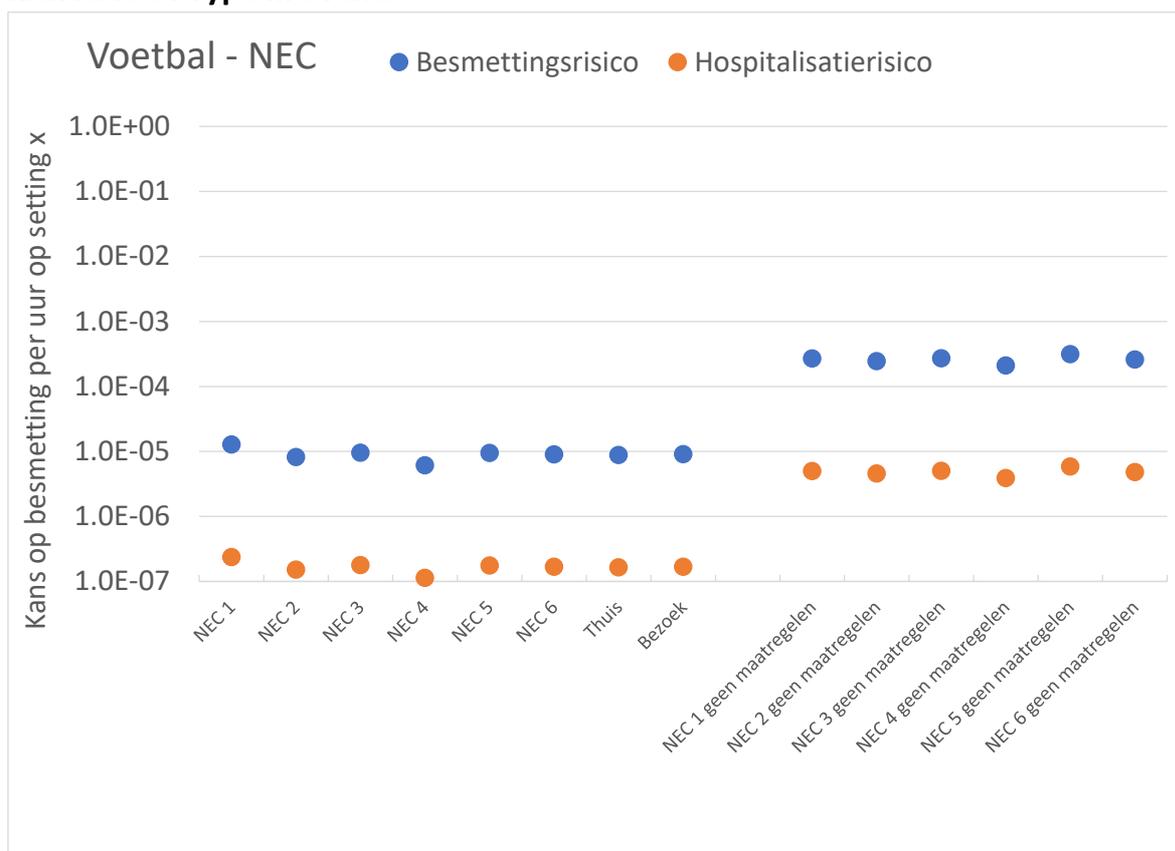


Figure 1 Expected contamination and hospitalisation risk for NEC (football) on a logarithmic scale compared to home and visit and the situation without measures.

Results NEC	Risk of contamination	Risk of hospitalisation	Contaminations per 100,000 people per hour
NEC 1	1.27E-05	2.37E-07	1.3
NEC 2	8.18E-06	1.52E-07	0.8
NEC 3	9.55E-06	1.78E-07	1.0
NEC 4	6.11E-06	1.14E-07	0.6
NEC 5	9.46E-06	1.76E-07	0.9
NEC 6	9.00E-06	1.67E-07	0.9
At home	8.82E-06	1.64E-07	0.9
Visit	9.04E-06	1.68E-07	3.4
NEC 1 no measures	2.68E-04	4.99E-06	26.8
NEC 2 no measures	2.45E-04	4.55E-06	24.5
NEC 3 no measures	2.70E-04	5.03E-06	27.0
NEC 4 no measures	2.09E-04	3.89E-06	20.9
NEC 5 no measures	3.13E-04	5.83E-06	31.3
NEC 6 no measures	2.59E-04	4.81E-06	25.9

Table 1 Expected risks of contaminations and hospitalisation for NEC (football) and the number of contaminations expressed per 100,000 visitors per hour

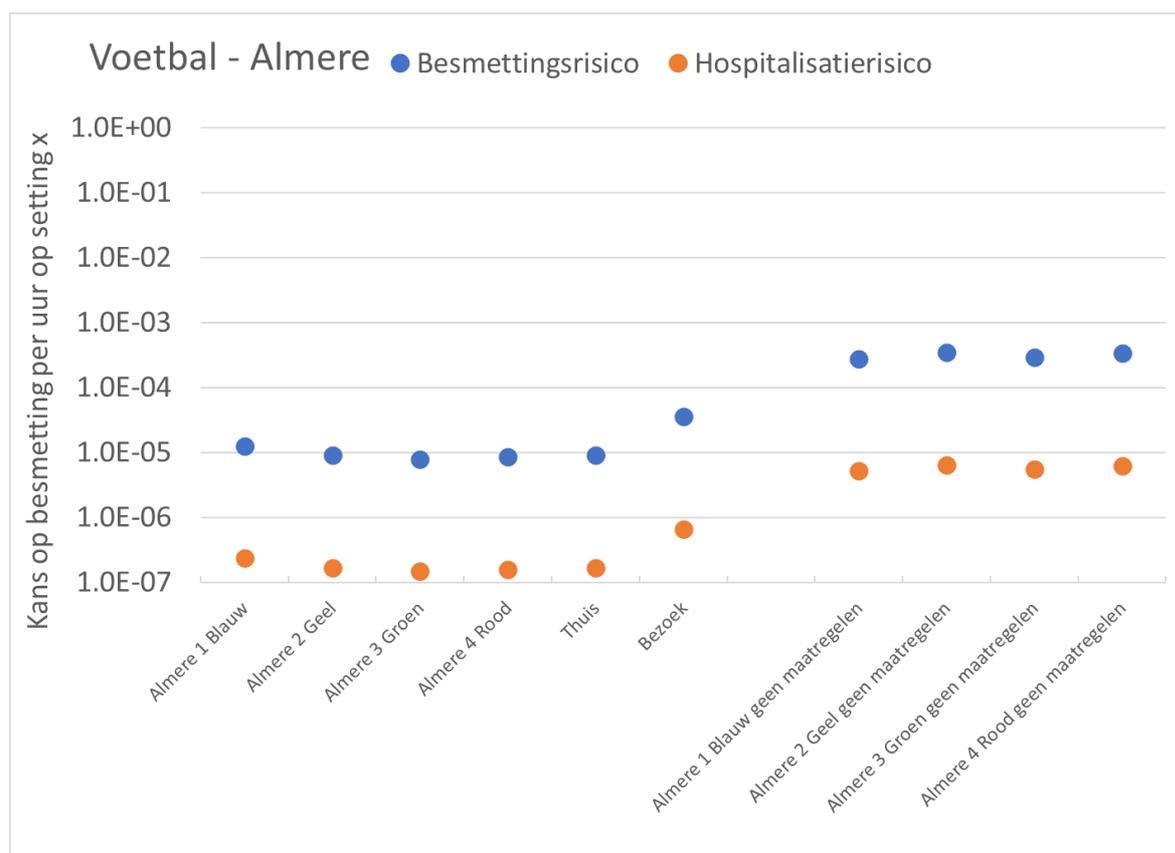


Figure 2 Expected risks of contamination and hospitalisation for Almere (football) on a logarithmic scale compared to home and visit and the situation without measures.

Results Almere	Risk of contamination	Risk of hospitalisation	Contaminations per 100,000 people per hour
Almere 1 Blue	1.3E-05	2.3E-07	1.3
Almere 2 Yellow	9.1E-06	1.7E-07	0.9
Almere 3 Green	7.9E-06	1.5E-07	0.8
Almere 4 Red	8.6E-06	1.6E-07	0.9
At home	9.0E-06	1.7E-07	0.9
Visit	3.5E-05	6.6E-07	3.5
Almere 1 Blue no measures	2.8E-04	5.2E-06	27.8
Almere 2 Yellow no measures	3.5E-04	6.4E-06	34.5
Almere 3 Green no measures	2.9E-04	5.4E-06	29.3
Almere 4 Red no measures	3.4E-04	6.2E-06	33.5

Table 2 Expected risk of contamination and hospitalisation for Almere (football) and the number of contaminations expressed per 100,000 visitors per hour.

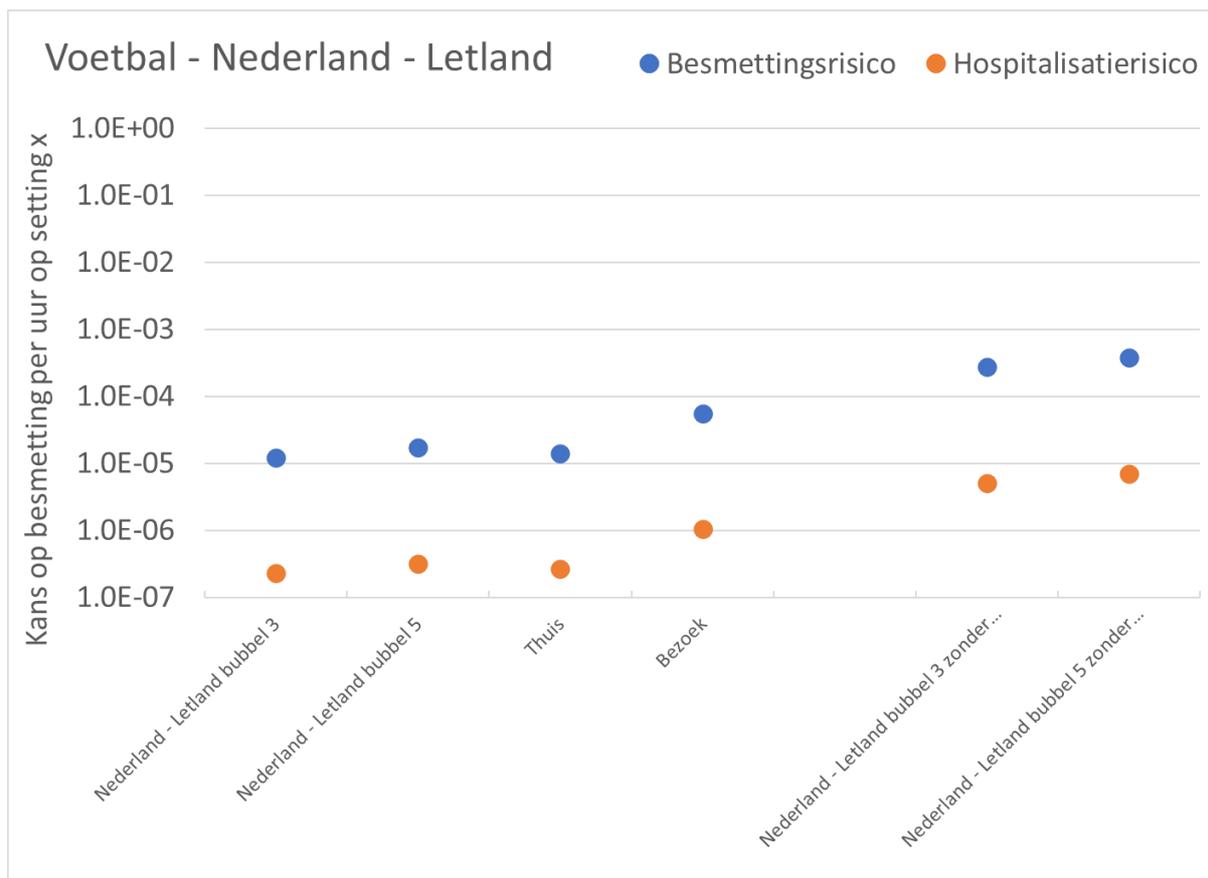


Figure 3 Expected contamination and hospitalisation risk for Netherlands international football match on a logarithmic scale compared to home and visit and the situation without measures.

Results Netherlands vs. Latvia (NL Team)	Risk of contamination	Risk of hospitalisation	Contaminations per 100,000 people per hour
NL vs. Latvia Bubble 3	1.22E-05	2.27E-07	1.2
NL vs. Latvia Bubble 5	1.70E-05	3.17E-07	1.7
At home	9.04E-06	1.68E-07	1.4
Visit	3.53E-05	6.57E-07	5.6
NL vs Latvia Bubble 3 no measures	2.71E-04	5.05E-06	27.1
NL vs. Latvia Bubble 5 no measures	3.78E-04	7.04E-06	37.8

Table 3 Expected risk of infection and hospitalisation for NL Elftal and the number of infections expressed per 100,000 visitors per hour

### Result

The business club bubbles score significantly higher in the risk model than the other bubbles. This is of particular concern as there was an occupancy rate of less than 20% of the maximum occupancy. We would therefore make a distinction between the business club and the regular visitors.

Although for the regular group of visitors one bubble scores slightly better in the risk model than the other, the risk profile of the is also lower than the BCO setting 'visit' and almost equal to the BCO setting 'Home'.

## Recommendation

15. Based on the risk model, events are possible, also with the substitution of generic measures, including the 1.5 metres. We recommend using the measures from the building blocks included in the risk model for the organisation of events. Pre-testing, outdoor air and intelligent design of the event based on the location provide a sufficiently safe environment.

## Recommendations

No and building block	Recommendation
<b>1. Behaviour</b>	At 50% occupancy (checkerboard configuration), masks are mandatory when visitors move around, pending the results from TNO and UTwente's ongoing studies on aerosol dispersion. At an occupancy rate above 50%, a mask should also be worn whilst seated.
<b>2. Triage</b>	Mandatory COVID-19 test prior to the event. In case of high prevalence, adhere to the current OMT recommendation of a rapid test within up to 24 hours before the end of the event.
<b>3. Triage</b>	In the customer journey, the triage questions at about four hours before the event work as a reminder to make an informed choice whether or not to travel. This must be part of the communication with the visitor.
<b>4. Triage</b>	Triage questions at the event itself and temperature readings do not detect infected persons. Rather, they are found to have a counterproductive effect, by causing congestion in the inflow of visitors, consequently generating additional contact moments. Allow these measures to lapse.
<b>5. Tracking</b>	Due to legal restrictions (privacy) on the exchange of detailed personal data, to aid thorough BCO in the event of a possible contamination, it is recommended to assume the separation options that locations naturally offer in order to enable sub-division into smaller groups within the proposed maximum capacity.
<b>6. Tracking</b>	By making it clear to the visitor which subcategory he or she falls into, the BCO can be limited to that subcategory in the event of an infection and not all visitors need to be contacted.
<b>7. Tracing</b>	Routinely urge visitors to download the Corona detector app immediately after buying an admission ticket, in order to simplify BCO.
<b>8. Tracing</b>	<p>Establish protocol with local GGD, discuss approach that includes: Questions about visits to events, including which subcategory person belonged to as a visitor. Check for CT values related to old infections.</p> <p>Arrangement between events organiser and local GGD to email visitors for the purpose of BCO. Events organisers must have the means at their disposal to be able to contact visitors at the request of the GGD for BCO.</p>
<b>9. Visitor dynamics</b>	The occupancy rate at 50% to 75% of the maximum capacity, whereby the location may opt for a checkerboard seating configuration, always keeping gaps of either one or two vacant seats in between, because this does not appear to make much difference, or in accordance with the UEFA protocol. Presence of stewards to maintain smooth inflow and people taking to their seats as quickly as possible is important.
<b>10. Visitor dynamics</b>	In the high prevalence phase, we advise against creating areas where people linger for longer before the game, but to ensure that they proceed quickly to the stands. By then keeping the F&B industry open continuously, a good spread of visitors can be ensured. Given the fact that a subsequent visit to the F&B points or the delivery of the F&B in the stands makes hardly any difference to the number of high-risk contact moments, we recommend that this choice be left to the discretion of organiser.
<b>11. Visitor dynamics</b>	<p>In the high prevalence phase, we recommend that one of the following three measures be applied in the indoor areas, including the Business Club in football stadiums:</p> <ul style="list-style-type: none"> <li>• 20% occupancy</li> <li>• Use as a F&amp;B point, not as a lounge</li> <li>• Special seating-only arrangement</li> </ul>

<b>12. Personal protection</b>	Make disinfectants available at the entrance of the event and at various locations in the building. Due to the flow and chance of increasing contact moments, do not make it mandatory at, for example, the entrance of the building.
<b>13. Vulnerable Groups</b>	Given that it is not yet 100% certain whether a vaccinated person can still transmit the virus, a test requirement also applies for vaccinated persons.
<b>14. Vulnerable Groups</b>	As long as a person from a high-risk group is not vaccinated, he/she is excluded from attending events at high prevalence.
<b>15. Rapid testing</b>	Rapid testing is to be organised in a decentralised way. Test visitors as close to home as possible. As a result, no unnecessary travel movement is made in case of possible contamination. In this way, the capacity can also be deployed in a more even spread and nor does this affect the logistics or visitor flows at the location of the event.
<b>16. Rapid testing</b>	Rapid testing facilities on site or in the immediate vicinity, so that in extreme cases there is an opportunity to test someone who has to enter the event unexpectedly.
<b>17. Risk model</b>	Based on the risk model, events are possible, also without the 1.5 metre restriction. Use the measures from the building blocks that are included in the risk model for the organisation of events. Pre-testing, outdoor air and intelligent design of the event based on the location provide a sufficiently safe environment.