



OPEN ACCESS

EDITED BY

Raf Berkvens,
University of Antwerp, Belgium

REVIEWED BY

Angela Fiedler,
University of Bamberg, Germany
Richard Keith Wright,
Auckland University of Technology,
New Zealand

*CORRESPONDENCE

Patricia M. Schütte,
✉ schuette@uni-wuppertal.de

RECEIVED 10 January 2024

ACCEPTED 10 July 2024

PUBLISHED 31 July 2024

CITATION

Schütte PM, Schulte Y, Schmitt A, Schönefeld M, Barber V and Fiedrich F (2024), Visitor safety and security compliance as a key component of event planning and implementation? Findings from a German research project on COVID-19. *Front. Comms. Net* 5:1368506. doi: 10.3389/frcmn.2024.1368506

COPYRIGHT

© 2024 Schütte, Schulte, Schmitt, Schönefeld, Barber and Fiedrich. This is an open-access article distributed under the terms of the [Creative Commons Attribution License \(CC BY\)](https://creativecommons.org/licenses/by/4.0/). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.

Visitor safety and security compliance as a key component of event planning and implementation? Findings from a German research project on COVID-19

Patricia M. Schütte*, Yannic Schulte, Alexandra Schmitt, Malte Schönefeld, Vivien Barber and Frank Fiedrich

Institute for Public Safety and Emergency Management, University of Wuppertal, Wuppertal, Germany

Introduction: Event Safety and Security Production (ESSP) typically involves event organizers, private security firms, authorities, police, fire brigades, and others. Their joint responsibility is to ensure safety, decide on measures, communicate them, and enforce them when necessary. Effective ESSP relies on visitor cooperation and rule compliance. The COVID-19 pandemic highlighted the importance of rule compliance in event safety and security. With the event industry's standstill and subsequent reopening under strict conditions, organizers had to implement comprehensive safety and hygiene measures. Studies on crowd compliance under pandemic conditions identified influencing factors. These include perceived threats, sociodemographic characteristics, group behavior, trust in institutions, etc..

Methods: Little research focuses on actively promoting rule compliance. Therefore, this paper addresses three research questions (RQ): (1) To what extent does the compliance of visitor safety measures play a role in the planning and implementation of events? (2) To what extent have visitor safety measures been complied with at events during the pandemic and did that change throughout the pandemic? And finally (3) How can the compliance of measures for visitor safety explicitly be taken into account in event planning and implementation? Qualitative data from 11 expert interviews and quantitative data from a representative population survey (N = 10,239) from a German research project on non-pharmaceutical interventions (NPIs) for the safe reopening of events during the pandemic are used to answer the first two questions (RQ1; RQ2). Results of the data triangulation point to recommendations for practical application (RQ3).

Results and Discussion: Findings suggest a high level of compliance with COVID-19 measures among the survey respondents, with expert consensus on the need for active and communicative visitor involvement in the implementation and enforcement of visitor safety measures. These insights extend beyond pandemic-specific events to traditional security and safety measures in crowd management. For event practice, this indicates the importance of consistent, transparent, and engaging communication strategies starting well before the event, with the

customer journey approach as a potential solution. Suitable approaches to visitor safety by event organizers should be implementable and enforceable; this is the key to ensuring that event communication in relation to ESSP is effective.

KEYWORDS

event visitors, compliance, event planning, event implementation, customer journey, COVID-19, research project, Germany

1 Introduction

Planned events like music festivals, carnivals, or sports events fulfill important social, cultural, and economic functions and constitute themselves by attracting a significant number of people. They are particular social settings, in which (classic) safety and security issues are regularly of important concern. The downsides of major events are risks associated to safety and security inherent to large crowds. Applied to the context of major events.

- safety risks include unintentional hazards such as crowd densities, weather, fire, traffic, technical failures, transmissible diseases, etc.
- security risks may result from the attractiveness of large crowds for intentional malicious acts such as terrorism, assault, vandalism, theft, etc.

While the vast majority of events run smoothly and visitors stay safe and sound, it is inherent to mass gatherings that, if something severe happens, it potentially has a significant harmful impact on many. Due to—quite a few—safety and security incidents in the recent past, ESSP has become a trending topic not only for the operational professionals involved but also in the broad field of civil security research. Of interest are mostly concrete research topics along with individual events and their effects, threats, etc. One current topic is “crowds.” Despite the frequency of large gatherings of people (crowds), there is still little research investigating their behavior. Crowd dynamics in confined spaces like event venues do rarely but repeatedly lead to critical, sometimes fatal situations, and researchers are keen to find out how crowds function and how they could be managed properly to prevent this dangerous phenomenon. Results serve as a baseline for models and simulations to support a risk-mitigating design for event venues, especially for highly critical areas like ingresses or evacuation routes, as well as crowd management (Vendelo, 2019; Still et al., 2020). Usually, ESSP is the responsibility of the event organizers, private security organizations, authorities and organizations with safety and security tasks like police and fire brigades and other voluntary, non-governmental and private actors, i.e., to guarantee, maintain and, if necessary, restore security and safety as a joint task (Schönefeld et al., 2022; Schütte and Willmes, 2022). Those actors define the framework conditions for ESSP, decide on measures, communicate them and, in case of doubt, enforce them. In doing so, they usually address event visitors, as the implementation of the measures requires their cooperation. With regard to their ESSP, the organizations referred to are therefore dependent on the crowds following the rules, as it can be assumed that even the best measures only work if those to whom they are addressed comply with them.

The importance of complying with non-pharmaceutical interventions (NPIs) and other measures and regulations was demonstrated in the context of the COVID-19 pandemic, which brought a profound disruption to the German event. After almost 2 years of a complete standstill, events were cautiously made possible again, but under stringent conditions—e.g., the obligation to wear a mask, the obligation for individuals to hold their distance to each other (so-called “social distancing,” generally supported by reduced capacity in event venues), and at times even a ban on chanting, or on selling food and drinks at the event venue. Restrictive measures were generally limited in time and adapted to local pandemic developments. In addition to conventional safety and security concepts, event organizers were required to develop comprehensive hygiene concepts and guarantee their implementation. The complex situation led to various sets of often-changing rules independently implemented by Germany’s 16 federal states. Figure 1 shows the common denominators for Germany.

A game changer leading to fewer hygiene restrictions was certainly the vaccination campaign, launched on 27 December 2020. As of 26 July 2021, 50 percent of the German population had received a basic immunization, and in February 2022, 75 percent were reached (Federal Ministry of Health, 2023). This allowed the reopening of public life in many regards, including the gradual withdrawal of many event-related measures.

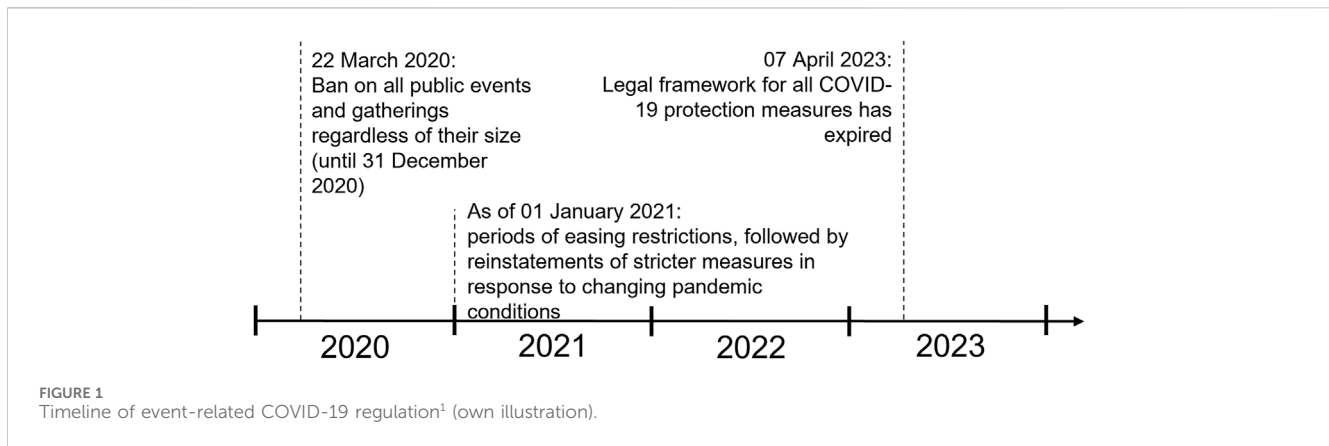
To summarize, event organizers were forced to take both traditional safety measures and new hygiene measures into account in order to obtain formal approval for the event. At the same time, the effectiveness of the measures depended to a large extent on event visitors complying with them. However, the “great unknown” during the pandemic—and this also applies to events in non-pandemic times—was the extent to which the measures would be complied with. Against this background, this paper aims to answer two main RQs.

- (1) To what extent does the compliance of visitor safety measures play a role in the planning and implementation of events?
- (2) To what extent have visitor safety measures been complied with at events during the pandemic and did that change over the course of the pandemic?

Answering these two questions will also provide solution approaches to a third, more practice-oriented question:

- (3) How can the compliance of measures for visitor safety explicitly be taken into account in event planning and implementation?

In order to catch up with the lessons learned with regard to compliance with safety and hygiene measures for event visitors



during the pandemic, the paper draws on data from a German research project that aimed to identify and assess NPIs for the safe reopening of (major) events during pandemic conditions. The data for answering RQ1 come from eleven semi-structured interviews with experts from the event industry. To answer RQ2, the results of an online survey representative of the German population were used, which was conducted in two waves with more than 5,000 participants each. Section three examines the survey and analysis methods in more detail (see also: [Schönefeld et al., 2022](#); [Schütte and Wilmes, 2022](#)). The results were triangulated and discussed to answer RQ3 (Section 4).

However, the results cannot only be related to events during the pandemic. They can also be applied to traditional security and safety measures in the areas of crowd management and control. In the context of event management, this means that clear and cohesive communication strategies should be initiated well before the actual event. A practical approach that can achieve this objective is the customer journey, which is understood here as an event visitor-centered way that uses communication strategies aligned to the phases before, during, and after an event in order to maintain constant contact, interaction, and information exchange opportunities with the visitor ([Kankainen et al., 2012](#)). This is also linked to the indirect goal (of the organizer) to bind the visitor to the event and to commit them to the corresponding rules and possible (safety, security, and hygiene) measures. The approach is discussed here in conclusion as a viable solution for event management (Section 5)¹.

2 Compliance in the context of events—state-of-the-art and assumptions

2.1 Compliance of rules and interventions in the context of events

Compliance can be described as an organization's or individual's adhering to and accepting laws, regulations, rules and ethical

principles, which is observable by confronting people with rules ([Stübig, 2015](#)). The procedural justice theory assumes that there is a normative compliance where actors conform to their behavior because they perceive a moral, ethical, or ideological obligation to do so ([Stott et al., 2012](#)). Deviant behavior can be reduced by powerful groups like the police or the justice system who sanction, but in a way that is perceived as fair ([Stott et al., 2012](#)). The constitution of compliance and power of a rule is recursive because a rule is complied with when sanctions by powerful authorities are imminent, but these sanctions can only be introduced if the entities are accepted ([Duschek et al., 2012](#)).

Studies on procedural justice, legitimacy, and normative compliance underscore this assumption (e.g., [Tyler, 1990; 2006; 2011; Hough, 2013](#)). It also implies that this is a relatively well-established topic, traceable, for instance, in discussions about citizens' compliance with rules, laws, and the subsequent enforcement by the police (why people obey the law). When citizens encounter these measures and find them to be fair, appropriate, and lawful they are more likely to support their implementation ([Tyler, 1990](#)). This also holds true within the realm of event security and safety, where the effectiveness of measures and regulations depends on a general acceptance of these rules and those who enforce them ([Hermann et al., 2021](#)). This applies to routine event operations and becomes even more critical during emergencies. In principle, it is not a new topic. On the contrary, critical incidents at events resulting in devastating consequences, such as the Bradford City stadium fire in 1985 and the Hillsborough disaster in 1989 repeatedly emphasize the significance of attendees adhering to event regulations and complying with security measures ([Committee of Inquiry into Crowd Safety and Control at Sports Grounds, 1985; Elliott and Smith, 1993; Elliott, 2006; Challenger and Clegg, 2011](#)). Far less dramatic (in terms of non-compliance), but also important, is the compliance with rules in the regular operation of events. Event attendees usually face rules by participating in an event, which is visibly reflected, for example, in "house" or "festival" rules, but of course also on the organizer's website and for the event, as well as in the fine print of the contract when purchasing a ticket. Rules for events have the function of establishing and maintaining safety and order. Therefore, rule compliance is crucial in the context of event safety and security ([Buchmann and Lodde, 2017](#)). Examples include carrying bags (only) of the permitted size, consideration of

¹ After 01 January 2021, there were many regional variations in COVID-19 regulation due to the respective regional pandemic situation.

prohibited items, following designated routes, arguments between visitors and security staff, etc.

Further research on event safety, along with insights from experts in the field, demonstrates that non-compliance with event regulations and associated measures can result in not only minor disruptions in the process flow (e.g., heightened crowd density, congestion at entry points) but also significant issues at specific event stages (e.g., delay in the start of the event) and even the potential for complete event interruptions or cancellations (Schütte et al., 2023).

In recent years, some of the event research has been devoted to crowds' rule compliance (under pandemic conditions). Those are, e.g., situational, contextual, institutional, individual, and social influencing factors (Section 2.2). Accordingly, perceived threats (e.g., by COVID-19), solidarity, sociodemographic characteristics, group structure and behavior as well as trust in state institutions play a role in rule compliance (e.g., Hermann et al., 2021; Seyd and Bu, 2022; Zimmermann et al., 2022; Purves et al., 2023). Yet, there is little research on actively generating or promoting compliance, e.g., through nudging strategies (e.g., Derrig, 2020; Bär et al., 2022). Furthermore, the arc is rarely drawn to rule compliance in the context of classical security and safety measures at events.

This study was set up in the specific context of COVID-19, where major events could either not occur or only with restrictions due to potential "hotspots" of infection. While this article deals with the situation in Germany, it is connected to the international discussion in this field (Miles and Shipway, 2020; Shipway and Miles, 2020; Frawley and Schulenkorf, 2023).

2.2 Factors influencing compliance with measures for visitor safety in the context of events

2.2.1 Situational/contextual factors

Haghani et al. (2023) provide a comprehensive overview of determinants influencing visitor behavior. They introduce the contextual factors of an event as important, such as the purpose, location, and time of the event. They also state, that the composition of the crowd, e.g., age or age range and the motivation for attending the event, can have an impact on behavior and therefore compliance. Dynamic crowds are constantly changing, with their size, density, and activities evolving over time. Changes in environmental factors (e.g., weather conditions) or the introduction of new activities (e.g., changes to the stage program) can cause sudden shifts in crowd behavior.

In addition, societal developments and external events can influence crowd behavior, such as attacks or accidents at other major events or, as in this case, the COVID-19 pandemic. During COVID-19, event attendees were confronted with politically and socially determined rules that changed rapidly. It was shown that, in the context of COVID-19, solidarity was a supportive factor for compliant behavior, but there were limits as individual sacrifices increased over time and solidarity decreased (Zimmermann et al., 2022). In addition, the recollection of public health messages and valid interventions during and after the event can reduce the risk of deviating from COVID-safe behavior (Rathbone et al., 2022).

Regarding the present study, it is a starting point that the context of the pandemic and the rapidly changing regulations have strongly influenced event planning and implementation, for example, by initially banning events and later (during the pandemic) imposing severely restrictive conditions of participation for visitors and correspondingly rapidly changing measures and rules.

Against this background, one assumption (A) is that some NPIs are more adhered to than others because those (more complied with) will also need to be complied with outside events during the pandemic. (A1)

2.2.2 Individual factors

In the context of COVID-19 or other perceived threats, individual perceptions of personal risk, the perceived risk of being detected with deviant behavior, satisfaction with democracy, and acceptance of societal norms may influence adherence to rules (Hermann et al., 2021; Zimmermann et al., 2022). These factors may also come into play a role when individuals attend events. Rathbone et al. (2022) mention in this context, for example, that it is based on the individual's assessment of costs and benefits, e.g., fear of potential "punishment" or the risk of infection, for example. In addition, individual characteristics such as age, gender, state of health, etc. Also influence compliance with rules and measures.

In this context, the assumption can be formulated that deviation from or compliance with rules and measures will vary depending on the individual cost-benefit perspective and socio-demographic characteristics. (A2)

2.2.3 Social influence

The social context plays an important role in influencing individuals' compliance with NPIs at events as well. This influence is exerted by several factors. Gustave Le Bon described that individual behavior in a group changes due to the "loss of individuality in large crowds" (Le Bon, 1895, cited by Bär et al., 2022). When individuals are part of a large crowd, they may experience a loss of individuality and become more susceptible to social influence. This may lead to a decrease in personal responsibility for adhering to risk reduction measures and makes it easier for individuals to be influenced by group dynamics (Bär et al., 2022). Group dynamics such as social identity and conformity mean that individuals are more likely to comply with mitigation measures if they perceive that others in their group are also adhering to them. This effect is particularly pronounced in large events, where the sense of belonging to a group is very strong, e.g., when everyone cheers for a band or sports club. The reason here is the role of emotions, as strong emotions like excitement can lead individuals and groups to engage in risky behavior. (Haghani et al., 2023; Purves et al., 2023).

The social influence is interesting and needs to be investigated insofar as social distancing or physical distancing was a fundamental measure to avoid infection during the pandemic, especially in the early stages. Many of the measures in general, but also in relation to events, were aimed at the collective cooperation of all people to avoid infection. Among other things, events were held with fewer visitors. The assumptions are that the motivation to follow rules at large events depends largely on the other visitors (A3) and the enforcement of the measures by the organizer. (A4)

2.2.4 Institutional factors

Increasing trust in institutions like the government can reduce the willingness to deviate from COVID-19 protection measures (Hermann et al., 2021, p. 324), and rules are also a crucial factor for compliant behavior (Zimmermann et al., 2022). Rathbone et al. (2022) emphasize the credibility and trustworthiness of an entity that issues rules, such as the perceived expertise and reliability of the organization in setting those rules as a factor influencing the individual decision to follow those rules as well. This can be linked to the procedural justice concept mentioned in Section 2.1. In addition to trust, it also requires the acceptance of the organizers and their representatives as well as the view that the rules and measures are transparent and sensible so that visitors are willing to follow them.

The assumption that can be derived is that the event organizer and its representatives on site, such as private security and public order services can have a similar effect if they appear trustworthy and transparent. (A5)

Event Organizers themselves take measures to influence visitor behavior, such as crowd management measures to direct the flow of visitors during ingress, circulation, and egress (Still et al., 2020). Two areas are described as particularly important for influencing the behavior: 1) Effective information and communication of rules and expectations for behavior at the event, with clear and consistent messages, can help promote compliance with mitigation measures (Still et al., 2020; Haghani et al., 2023; Purves et al., 2023). After all, only well-informed visitors can comply with the rules. At the same time, it is important not only to communicate the rules but also to be clear about enforcement, i.e., what happens if the rules are not followed. Communication and enforcement, as well as technical measures in the field, should be put into practice and not just put on paper. Especially in the area of enforcement, the rules should also be coordinated with the local safety and security services (Schönefeld et al., 2022; Purves et al., 2023). It is worth mentioning that professional stakeholders act as role models in their behavior in the event context and should therefore strictly adhere to the regulations themselves. The aspect of clear and transparent communication of the rules by the organizer is also emphasized by Zimmermann et al. (2022). The communication should not only include the rules but also explain why the rules are necessary and appeal to the sense of community. 2) Effective infrastructure design (for both standard operations and emergency operations) along with robust enforcement measures are required. This includes infrastructure, such as clear signage, that can make it easier for individuals to comply. In addition, strong enforcement of the rules by stewards or other staff can help to ensure compliance (Still et al., 2020; Purves et al., 2023).

Based on those explanations, one of the key assumptions for this paper is that the compliance of event visitors during the pandemic can be strongly influenced by measures taken by the organizer and its representatives, especially via communicative strategies throughout all phases of an event. (A6).

As the explanations above show, there is a lot of literature on why people do or do not follow rules, as well as literature on how the context of the event changes this or what influence it has. Fewer sources deal with what actions are appropriate to influence or increase compliance with policies at events. Against this background, this study takes up the six assumptions (A1 to A6) derived from the existing literature and expands on them in the context of the project described in the next section and the corresponding explorations.

3 Research context and methods

This article's line of argument is based on data that was gathered for the research project "Non-Pharmaceutical Interventions and Social Context Analysis for Safe Events (NORMALISE)," which was funded by the German Research Foundation (DFG) between September 2021 and December 2022 as part of a special COVID-19 funding scheme. All authors of this article have been part of the project team in various roles with Frank Fiedrich as the Principal Investigator and Head of the Institute for Public Safety and Emergency Management at the University of Wuppertal (Germany).

In the following, the background and goals of the NORMALISE project will be introduced, and subsequently, the empirical methods will be explained.

3.1 Background and goals of NORMALISE

The overall aim of NORMALISE was to identify and evaluate NPIs in the context of major events in Germany (see Section 1). The temporary ban of events was itself an NPI. After major events were in principle allowed again, their approval was often linked to the implementation of NPIs. Numerous NPIs were imposed during the pandemic, some of which were mandatory or recommended as voluntary measures (Schönefeld et al., 2022; Schütte et al., 2023; see also Section 1 for examples).

It cannot be ruled out that in case of a change in the pandemic situation with regard to COVID-19 or other pathogens, the planning and implementation of major events could be restricted again. Due to the economic, cultural, and social significance of events, operation under certain conditions may well be considered preferable to a temporary, complete ban on events, as long as the health and safety of the visitors can be adequately guaranteed by NPIs. Nevertheless, for a long time, it was not possible for event organizers, approving authorities and event service providers to benefit from any form of guidance. This was also due to the interacting social, technical, and organizational components that made the planning and implementation of events complex even before the COVID-19 pandemic (Schönefeld et al., 2022; Schönefeld et al., 2023).

In addition to the scientific contribution of the research project, NORMALISE wanted to prepare the results for practitioners and make them publicly accessible. With the publication of a "planning and decision-making aid for the event industry, approving authorities, and related organizations" (Schönefeld et al., 2023), the empirical results could be fed back into practice in an appropriate way.

3.2 Methods

3.2.1 Method 1—expert interviews

Semi-standardized expert interviews were conducted to gain a deeper understanding of the current situation and various needs of the different professional stakeholder groups (see also Reid and Ritchie, 2011). The interview guideline was designed on the basis of a continuous screening of changes in the German COVID-19 rules and legislation, and on a document analysis of event concepts for hygiene and infection protection. The guideline (Supplementary Appendix S6) encompassed topics such as.

TABLE 1 List of interviewees; own visualization.

No. of interviewees	Profession
3	Event organizer (sports, music festivals, ...)
3	Authority or organization with security tasks (police, fire brigade) (AOS)
2	Educational service provider for event safety and security
1	Security service provider
1	Consultant for hygiene and infection prevention
1	Municipal approving authority
1	Municipal public health office
12	Total

- NPIs,
- (unwanted) interactions of NPI with measures for safety and security,
- perceived NPI-related behavior and attitudes of event-goers,
- the impact of COVID-19 on the own organization, collaboration with others, and the event sector in general.

A total of 11 online interviews were conducted between summer and autumn 2021. One interview was attended by two interviewees (see Table 1). The interviews were transcribed, anonymized, and coded within the framework of a qualitative content analysis (Kuckartz and Rädiker, 2022; Mayring, 2022) using deductively-inductively formed categories with the help of MaxQDA software. The recorded and transcribed interviews were then evaluated and interpreted using qualitative content analysis, i.e., deductive-inductive, category-based analysis (Gläser and Laudel, 2010; Mayring, 2022). The interview data will be analyzed with regard to the first research question (see section 1).

3.2.2 Method 2—two-wave population survey

In order to gain insights into the perspectives of potential event guests in Germany, a representative population survey was conducted in addition to the expert interviews. In collaboration with a survey institute (Norstat Deutschland GmbH), the survey was conducted in two waves at two different points in the course of the pandemic: in September 2021 ($n = 5,222$), a few months after the second lockdown in Germany amidst a total ban on events, and in May 2022 ($n = 5,017$), when further easing was implemented and events were allowed to resume, albeit under strict hygiene rules. The aim of the survey was to measure the acceptance of infection prevention measures (NPIs) at events.² In addition to demographic questions, the respondents were

asked about their own acceptance of general prevention measures and of their circle of contacts, as well as their event experience (before and during the pandemic) and expectations towards the event, organizer, and fellow attendees in five question blocks. The results of the survey serve to answer RQ 2 (“To what extent have visitor safety measures been complied with at events during the pandemic and did that change over the course of the pandemic?”). The acceptance of NPIs in the context of events was surveyed as part of a customer journey, in which a distinction between prevention measures before, during, and after events was made. At this point, the surveys build on the result of the interview evaluation. A few interviewees mentioned the customer journey as a holistic communicative approach that runs through all event phases from the perspective of the event visitor (Kankainen et al., 2012). The term and associated approach of the customer journey originates from the economic context and describes a process in which a customer decides on a product or service. The special thing about it is that the enterprise retraces the individual steps (so-called touchpoints) from the customer’s (expected or assumed) perspective, from the initial information research to the first considerations on the product or service, to purchase and after-sales aspects. More details are provided in the interview results. By structuring the online survey according to the customer journey approach, the participants mentally go through the three phases before, during, and after an event while giving their assessment of the NPIs asked about. Overall, the data allow a comparison between compliance with various prevention measures in the context of events and the context of everyday life. The statistical software IBM SPSS (version 28.0.1.0) was used for the analysis.

3.2.3 Triangulation of the data

Analyzing the expert interviews alongside the results of the representative population survey uncovers several parallels which also allow conclusions to be drawn about the assumptions formulated in Section 2.2. These insights could be leveraged for effectively implementing NPIs and classic event safety and security measures in the context of major events. The triangulation logic is that qualitative and quantitative data and methods could support and complement each other with the aim of overcoming methodological weaknesses. (Bryman, 1988; Bryman, 1992; Flick, 2011). This was done through a combination of expert interviews and surveys of individual event attendee behavior. To do this, we proceeded as follows: The inductively built categories of the interview analysis are summarized and used as a starting point for the classification of the quantitative data. In order to create a comprehensive picture of the acceptance and compliance in the context of the event, these are the specific categories that were chosen: compliance based on institutional factors, planning vs reality, and customer journey (see Section 4.1). These results are compared with the corresponding findings from the questionnaire (see Section 4.2) and the individual conclusions are derived from the combination of both sets of results (see Section 4.3). Comprehensive in nature, this approach merges the viewpoints of both the concept and measure creators and implementers on one hand, and the potential addressees and followers on the other. The triangulation results aim to answer RQ 3 (“How can the compliance of measures for visitor safety explicitly be taken into account in event planning and implementation?”).

² The terms “compliance” and “acceptance” are used synonymously in this paper. As the respondents are asked to what extent they would accept the NPI if they were to attend an event at the time of the survey, it can be assumed that they interpret the word “accept” in the question as meaning that they would or would not comply with the measure if they were to attend an event.

4 Results

4.1 Key insights into the role of the audience from interviews

All interviewees were actively involved in the creation and implementation of hygiene concepts for reopening events during the pandemic, and all of them are experienced in terms of classic event safety and security topics. Three topics stand out that are relevant here: 1) compliance with measures based on different factors, 2) planning vs reality in terms of concepts, and 3) customer journey as a practical approach.

4.1.1 Compliance based on institutional factors

According to the interviewees, compliance with the rules and measures by event visitors is influenced by various factors. However, the interviews contain the most references to institutional factors. From the perspectives of the interviewees, it is particularly important that visitors are continuously provided with information about the event and the measures taken, which “is the task of the organizer to communicate and convey this” (Educational service provider 1, position (in the following: pos.) 42)³, as the following quote indicates:

“And you should not underestimate the fact that a good concept is only half the battle, you also have to communicate it credibly to the outside world so that people are still motivated to come to your event.” (Educational service provider 2, pos. 34)

One main aim here is to create meaning, clearly outlining the reasons behind specific measures and emphasizing the significance of visitor cooperation in ensuring a safe event, as highlighted by the following interviewee:

“I think you have to make certain concessions, to give people the feeling that you are on their side and that you are working in their interests. And the concessions, if you can justify and make them, should be made in any case and it should also be communicated that you are making these concessions.” (Security service provider 1, pos. 41)

This is closely linked to a certain level of trust that visitors have in event organizers and their representatives they are familiar with, as those are expected to maintain ongoing and extensive communication with their attendees, even prior to other events.

“Then, of course, we also have a certain amount of experience when it comes to our audience. Generally speaking, I would say that we have an audience that already trusts us to a large extent and also accepts the rules we have set up for the event.” (Event organizer 2, pos. 41).

However, the key lies in engaging with the attendees, encouraging them to participate actively and cooperate, which, in turn, can increase the likelihood of measures being accepted, as indicated in the following quote:

“And you actually have to hope that the people who go to such an event also have an insight into the measures. And also want to play an active part in ensuring that such an event takes place and do their bit.” (Consultant 1, pos. 17)

The importance of communication and, figuratively speaking, transparency in this context is emphasized in all interviews. According to certain interviewees, other important aspects are the appropriateness and practicality of measures. In their opinion, an excess or deficiency of measures can potentially lead to irritation among visitors. The two following quotes demonstrate it:

“Always bearing in mind, of course, as we discussed earlier, that visitors do not think it’s over the top and say, they’ve got a bang, I’m certainly not going there.” (Educational service provider 2, pos. 44)

“Well, it’s like a security concept. It makes no sense for it to only look good on paper if you know that it will not work in practice. So of course, you need a concept where you are at least sure that you can get the majority of people to accept the necessary measures. And then, of course, you also have to ensure that these measures gain a certain level of acceptance through communication. So, communication in advance and on-site.” (Event organizer 2, pos. 39)

The interview passages summarized above thus speak for two aspects of the institutional influence on compliance: 1. The great importance of the organizer’s communication with visitors and their guidance through targeted, meaningful, and comprehensible measures before, during, and after the event (A6); 2. The relevance of the credibility and trustworthiness of the organizer and its representatives (A5).

4.1.2 Planning vs reality

The institutional compliance factors mentioned are also linked to the statements made by all interviewees regarding the importance of realistic and feasible planning. For them, it is a key point for a successful implementation of measures—regardless of whether it is a specific hygiene concept or a classic event safety concern:

“And basically, it is the same question as with all other safety-relevant measures, the transfer of the concepts into practice is the exciting thing. So how do I really manage to ensure that it is actually implemented?” (Event organizer 3, pos. 43)

In the eyes of some interviewees, the feasibility of various measures and, in case of doubt, consistent enforcement when rules are broken or not followed have an important signal effect with regard to visitor compliance, which is supported by the following quotes.

³ The interviews were conducted and transcribed in German. For this article, the interview excerpts used were translated into English.

“And once again, no matter how good a concept is, it is useless if it is not adequately enforced and implemented.” (Consultant 1, pos. 81)

“Usually, as with every infringement, whether it is pyrotechnics or other things, you always have the opportunity to speak up and say: “Guys, that’s not on.” And you can do this several times, with a corresponding increase in tone and then possibly also with the threat of consequences.” (Event organizer 3, pos. 29)

There are some indications that certain hygiene concepts drafted during the pandemic were, in reality, unfeasible. This was due, for example, to the fact that as many requirements as possible (including unnecessary ones) were to be included, aiming at obtaining event approvals “at all costs” without genuine intent to implement these measures. During the COVID-19 pandemic in Germany, it was deliberately considered that the health authorities, as licensing authorities during the pandemic, lacked the capacity for a thorough review (Schönefeld et al., 2022; Schütte et al., 2023).

Some interviewees point out that, despite all the regulations, there are still phases and areas of an event that are almost impossible to regulate. It is noted here how important communicative processes are that inform and involve event visitors on the part of the event organization and safety planning:

“But you basically have to say that the moment the visitor has reached their seat, whether it is a seat or standing room or whatever. Until the moment they leave it again, nothing is usually regulated. Yes, I would say that there is a lot of talk about entry and exit situations. In the concepts I’ve read so far, I’d say there’s actually relatively little in between.” (AOS two and AOS 3, pos. 44)

The interview passages make it clear that rules and, above all, measures must be realistic and practicable if they are to be followed. This supports assumption A4 that the motivation to follow rules at large events depends on the enforcement of the measures by the event organizer.

4.1.3 Customer journey

With regard to the last point, a few interviewees mentioned an approach known as the “customer journey”. The following interview excerpt summarizes a central idea and aim of the content:

“This means that people basically have to know the conditions under which access to this event is possible before they make a decision before they even answer the question of whether they want to go to this event or not. In my opinion, that is the most important thing, that people are not surprised on the way there. Of course, things can change.” (Educational service provider 1, pos. 30)

In other words, this is a holistic communication approach that provides for the communicative involvement of visitors in all phases of the event:

“We called it the journey-based approach (...) tthis visitor-centred approach. In other words, you take the perspective of

an objective third party and look at how a visitor moves through a major event. And in the first approach we had, we divided it into different phases. So, we say that a hygiene concept does not actually start when the visitor arrives at the venue (...). Rather, a good hygiene concept begins at the point at which the visitor makes the decision to attend an event. Because from this point on, they are accessible for information and intervention.” (Consultant 1, pos.48)

In this way, visitors are continuously “accompanied” by the event organizer and provided with information. The customer journey also allows the various groups to be addressed and their diversity to be taken into account, as the following quote suggests:

“And then you should look quasi from the arrival to the check-in to the concert attendance and everything that has to do with it. So catering, other sales stands, sanitary facilities, possibly overnight accommodation on site, etc., right through to departure should be considered as part of the risk analysis/hazard assessment and the corresponding risks should be identified at the respective touchpoints assigned a risk value, appropriate measures should be assigned, whether this takes place directly at the touchpoint or well upstream, which reduces the corresponding risk at the corresponding point. And to carry this out for all touchpoints and then finally have a corresponding catalog of measures for each touchpoint and for each visitor group, which must then be A sensibly implemented, B sensibly communicated and C communicated in such a way that people understand why you are doing it and you do not have to force them to do it.” (Event organizer 2, pos. 28)

To summarize, the interview passages on the customer journey speak for two things: the importance of communicative support throughout all phases of an event (assumption A6) and the possible indirect integration and connection of visitors into event management in the sense of a social factor (assumption A3).

As already mentioned in Section 3.2, the information on the customer journey in particular was used as an important result of the interview evaluations in the creation of the online survey (see Section 4.2). The results of both methods can therefore be presented in triangulated form in Section 4.3.

4.2 Selected survey results

The survey to measure the compliance with NPIs in the German population was conducted in two waves (September 2021 and May 2022), whereby the samples are independent of each other and can be considered a representative of the German population in terms of gender, age distribution, distribution across the federal states and educational qualifications (see Table 2). The overall sample contains the responses of a total of 10,239 participants. Selected results are presented below.

Based on the customer journey approach (see Section 4.1), the acceptance of various NPIs before, during, and after events was surveyed using a four-point scale (I fully accept the measure, I tend to accept the measure, I tend to reject the measure, I fully reject the measure). The questions were as follows: “Imagine that you are

TABLE 2 Sample characteristics; own visualization.

	September 2021	May 2022
Male	2589 (49.6%)	2494 (49.7%)
Female	2621 (50.2%)	2514 (50.1%)
Diverse	9 (0.2%)	6 (0.1%)
Age	Ø 50	Ø 44
Education		
Low education	1394 (26.7%)	1144 (22.8%)
Middle education	1485 (28.4%)	1379 (27.5%)
High education	2164 (41.4%)	2479 (49.4%)
N	5222	5017

attending a major event in compliance with coronavirus protection measures. Before/during the start of the event, you and the organizer already have to fulfill a number of requirements. To what extent would you accept the following measures to protect the event audience and staff?" and "To what extent would you accept the following measures after attending the event to protect the event audience and staff?". Figures 2–4 show the means of the surveyed NPIs and the two waves in comparison. Mann-Whitney U tests were calculated additionally to check whether the acceptance of the listed measures differed significantly between the waves. The Mann-Whitney U test is suitable for the independent, non-parametric, and ordinal scaled data of the sample (Bortz and Schuster, 2010). In each figure, any means that differ significantly are marked with an asterisk (*).

The acceptance of all measures surveyed differs significantly between the two survey waves. However, the observed effect sizes⁴ in this study are notably minimal (Supplementary Appendix S1). Participants are slightly more likely to accept almost all of the measures before the start of an event in September 2021 than in May 2022, with the exception of a free rapid COVID-19 test, which is slightly but significantly more likely to be accepted in the second wave compared to the first wave. The only measure that respondents tend to reject on both survey dates is the paid COVID-19 rapid test. The two response options at the bottom were only available in the second wave of the survey. On average, participants in the second wave are more likely to accept that the event would take place in compliance with the 2G + regulations (2G+ is an abbreviation for a common rule in Germany during the COVID-19 pandemic and means: access only for recovered or vaccinated persons plus negative test or booster vaccination) than without any COVID-19 protective measures at all, which shows that certain rules seem to be necessary to ensure that visitors to events feel comfortable during a pandemic.

⁴ The effect sizes of the Mann-Whitney U tests were calculated using Pearson's correlation coefficient r and interpreted according to Cohen (1988). According to Cohen (1988), an effect size of $|r| = >0.1$ is small, $|r| = >0.3$ is medium and $|r| = >0.5$ is large.

The results of the two survey waves also differ significantly with regard to the measures surveyed that could potentially be applied during major events. The effect sizes are also very small (Supplementary Appendix S2). Once again, it can be seen that participants are slightly more likely to accept all measures during the event in September 2021 than in May 2022. With regard to the acceptance of the measures included in the survey during major events, it can be seen that short-term and low-threshold actions such as the use of disinfectant, separate routing, and fever measurement are generally more likely to be accepted than the prohibition of actions that are permitted at major events under non-pandemic conditions and are part of the enjoyment of an event. The prohibition of the consumption of food and beverages and the prohibition of singing are significantly less accepted and even more likely to be rejected in the second survey wave. One possible explanation for these results could be that the rejection of or compliance with rules is related to individual cost-benefit assessment (see A2–compliance with rules depends on individual cost-benefit assessment and socio-demographic characteristics).

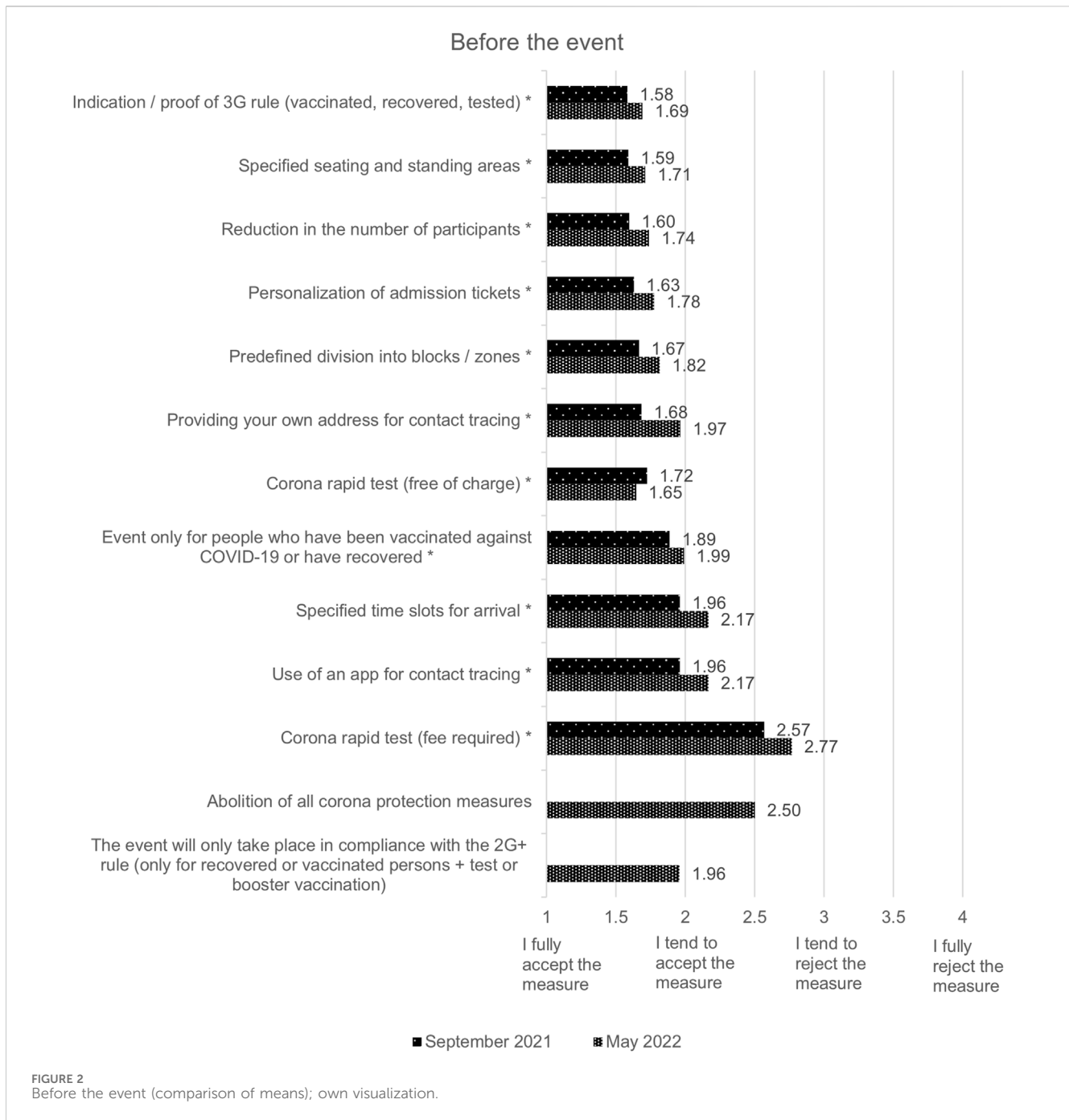
Regarding the two post-event measures evaluated, there is a significant difference between the outcomes of the two survey waves. The effect sizes are also very small (Supplementary Appendix S3). The data reveals that participants are somewhat more inclined to accept all measures following the event in September 2021 compared to May 2022. This trend aligns with the observed patterns in measures taken before and during major events (RQ2). While post-event measures generally garnered more acceptance than rejection, there was a slight decrease in approval as the pandemic progressed into its later stages.

These results are in line with the general compliance with the various COVID-19 NPIs that existed outside of events (Figure 5). In response to the question "To what extent do you think you have generally complied with the following coronavirus protection measures?", participants were asked to answer on a four-point scale (always, often, rarely, never). The mean values show that, on average, respondents in both waves stated that they were more likely to follow than not to follow all of the NPIs surveyed. Nevertheless, the average compliance with all NPIs except for the sneeze etiquette has significantly decreased in May 2022 compared to September 2021 (Supplementary Appendix S4).

The results of the survey presented so far can be seen as supportive of assumption (A1), which states that those NPIs are more likely to be complied with during events that also applied outside of events during the pandemic.

In both waves of the survey, participants were also asked whether they had already attended one or more major events permitted under the COVID-19 measures in the years 2020–2022. In the second wave, a filter question was added for the 3,306 participants who answered "No" to determine possible individual motives. The following bar chart shows how many times the answer options to the multiple-choice question "Why did you not attend any major events in 2020–2022?" were selected in total.

The results show that hygiene concepts that appear too weak are rather seen as a reason for not attending a major event than hygiene concepts that appear too strict, which fits in with the results of the acceptance of various NPI before the event, which show that, on average, the removal of all rules is neither accepted nor rejected and

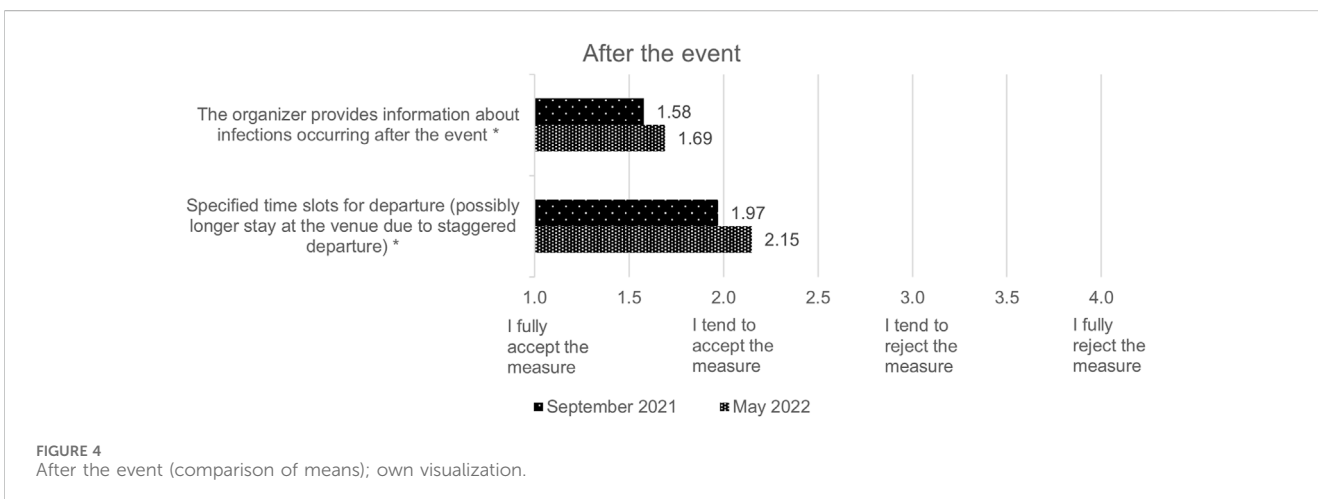
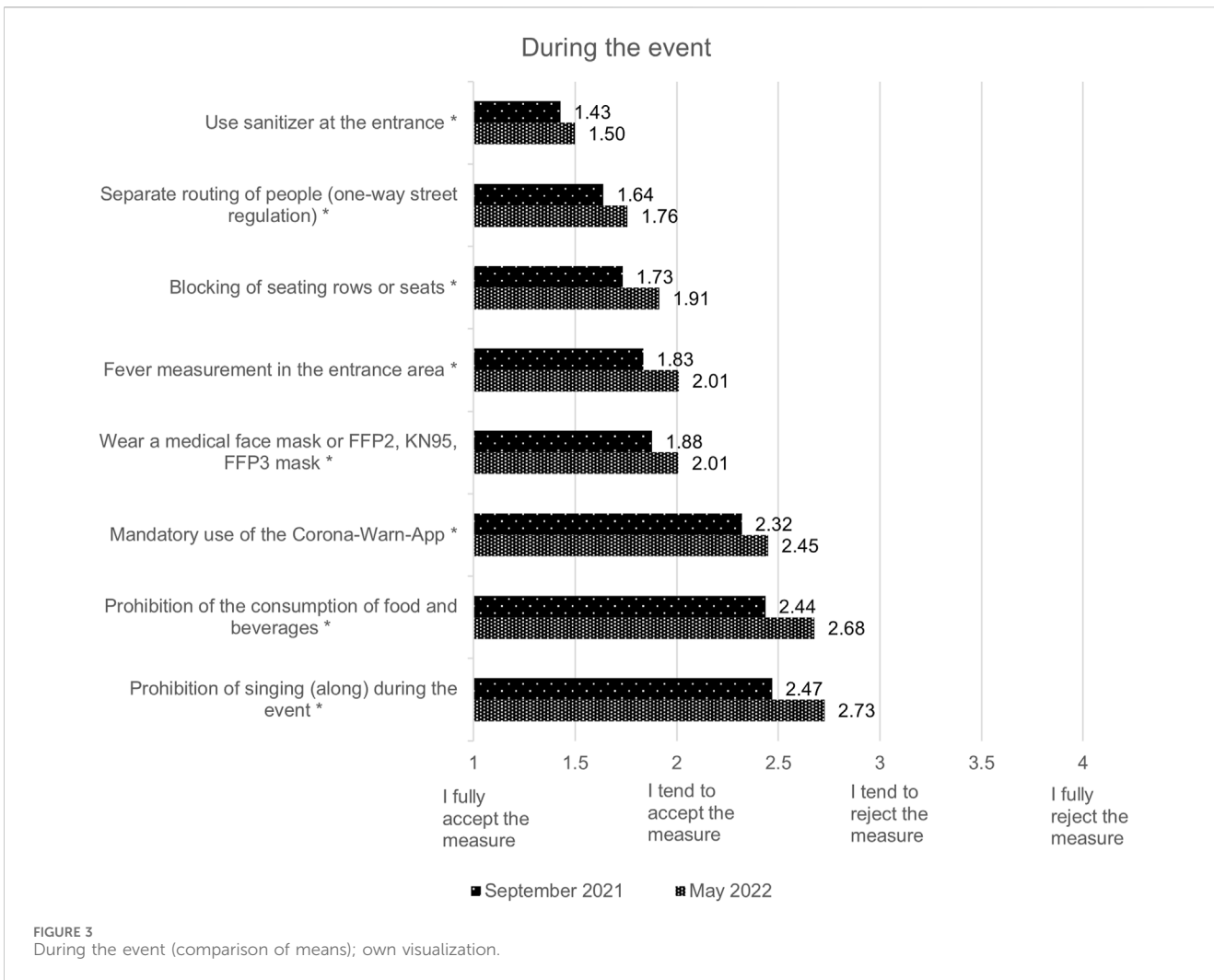


an event that takes into account the 2G + rule (see above) would be more likely to be accepted.

What specific expectations do visitors hold for the organizers of major events? Figure 7 shows how respondents in both survey waves rated the options provided for the question “My expectation of the organizer is that”. On a prescribed four-point scale (Fully applicable, rather applicable, rather not applicable, does not apply at all) (see also Supplementary Appendix S5).

The results show that a monitoring of compliance with COVID-19 rules by the organizer and its staff is desired overall. Even the cancellation of an event is classified as justifiable rather than unjustifiable at both survey waves. Overall, respondents tended to

expect individuals to be admonished or expelled rather than anticipating the cancellation of the entire event. Regarding the type of information provided about applicable rules, respondents were slightly more likely to expect to be informed in advance than on-site. With regard to the customer journey, the results show that communicating the rules in advance is also an important aspect for event attendees, which is consistent with the assumption (A6) that NPI compliance at events can be strengthened by a coherent communication strategy on the part of the organizer. The results of this question can also be seen as providing support for the assumption that the motivation to follow rules at events depends on the enforcement of the rules by the organizer (A4).



4.3 Data triangulation and discussion

Tables 3–6 present conclusions that can be drawn from the triangulation of the data sorted by categories.

#1: Strict concepts likely hold more merit than overly lax ones, yet striking a balanced middle ground appears to be a feasible approach. Both visitors and responsible stakeholders emphasize the need for consistent enforcement of concepts, measures, and

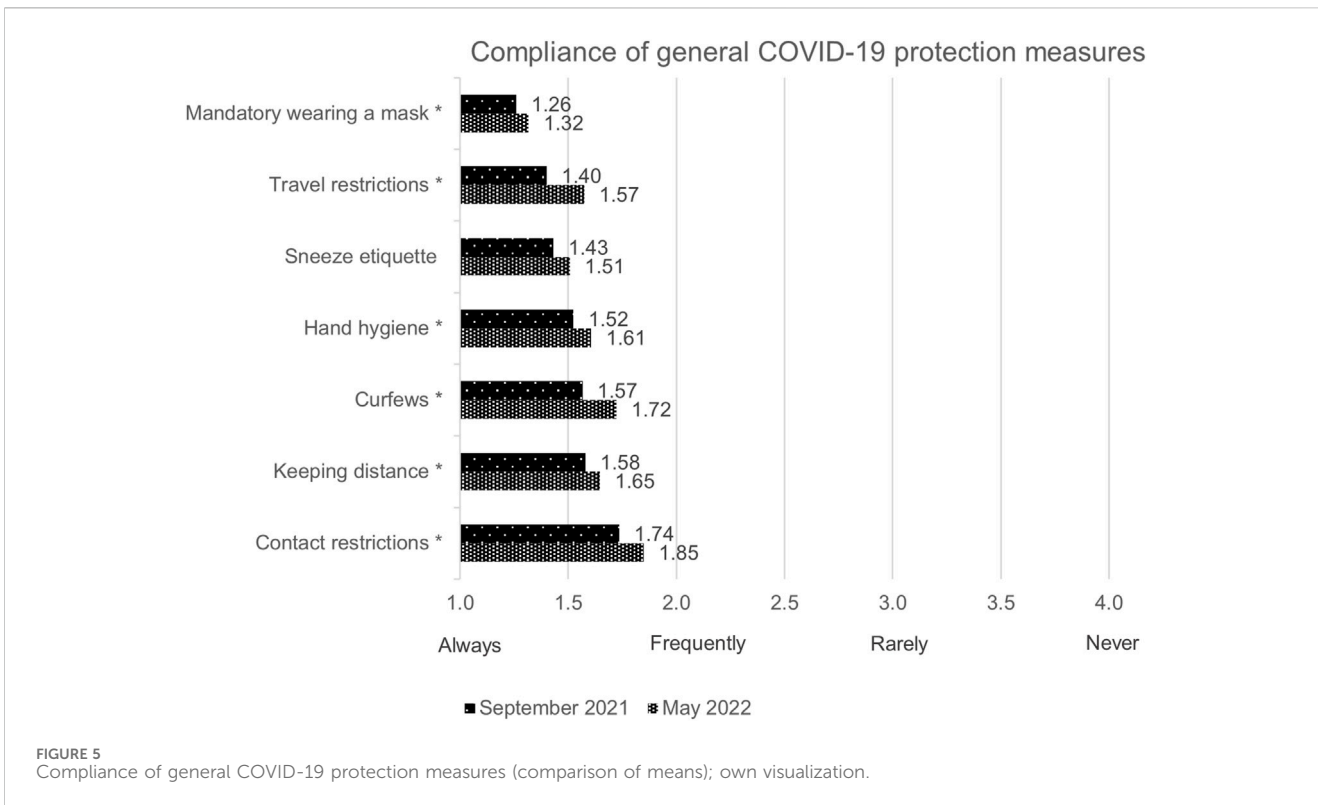


FIGURE 5 Compliance of general COVID-19 protection measures (comparison of means); own visualization.

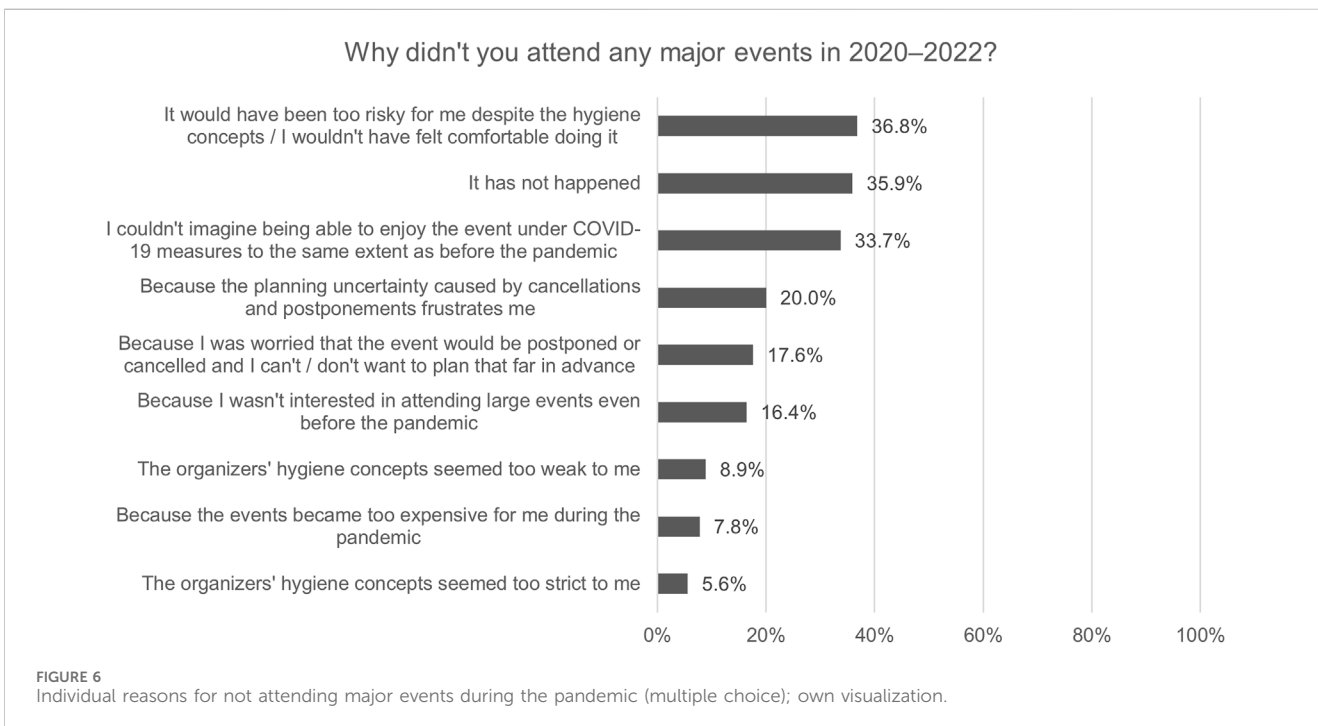


FIGURE 6 Individual reasons for not attending major events during the pandemic (multiple choice); own visualization.

rules, accompanied by sanctions. Moreover, the likelihood of acceptance and compliance increases significantly when those in charge actively engage guests through clear and comprehensible communication (see Table 3).

#2: Appropriateness and feasibility are key characteristics of successfully implemented concepts and measures at major

events. But, the extent to which measures and rules are accepted and complied with depends on whether they are presented in a meaningful and transparent way. This applies to technical (e.g., barriers, routing), organizational (rules, processes, etc.), and personnel measures (e.g., 2G/2G + controls) (see Table 4).

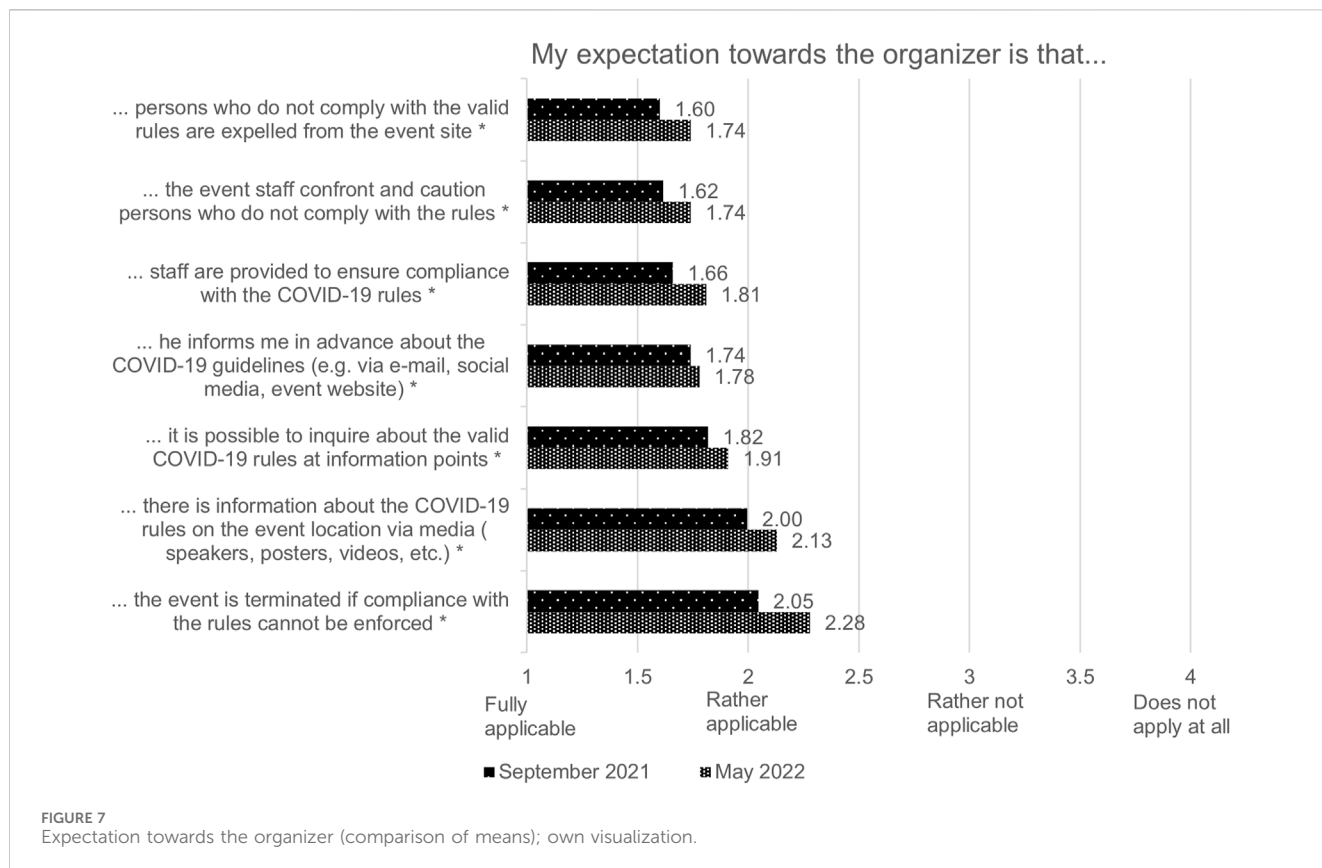


TABLE 3 Triangulation of qualitative and quantitative data, factor: strictness, consistent, sanctions and involvement; own visualization.

Interviews (exemplary sources)	Summarized qualitative and inductive categories	Survey (figure)	Summarized quantitative categories	Triangulated category
- Event organizer 3, pos. 43	realistic and feasible concepts	- Figure 2: Before the event	- acceptance of almost all measures	#1 Strict concepts, consistent enforcement of rules, sanctions and involvement
- Consultant 1, pos. 17		- Figure 5: Compliance of general COVID-19 protection measures	- rather strict than weak concepts	
		- Figure 6: Individual reasons for not attending major events during the pandemic		
- Consultant 1, pos. 17	consistent enforcement and involvement	Figure 7: Expectations towards the organizer	- expectation of sanctioning non-compliance with the rules	
- Consultant 1, pos. 81			- indication of non-compliance with rules	
- Event organizer 3, pos. 29				
- AOS 2 and AOS 3, pos. 44				

#3: Clarity regarding the scope of reference is paramount for the perceived appropriateness of rules among event visitors. If the rules prove excessively intrusive to the overall experience of a major event or if their applicability remains unclear—for instance, when visitors are aware of weekly rule changes or perceive their implementation as impractical—they are likely to be met with resistance and non-compliance (see Table 5).

#4: Only explanatory, honest, and sensitive communication can help against ambiguities and uncertainties. Even responsible event stakeholders are aware that they cannot regulate everything with rules or technical measures. Instead, they see the relevance of communicative approaches that accompany all event phases and “unregulated” spaces. That is

TABLE 4 Triangulation of qualitative and quantitative data, factor: appropriateness and feasibility; own visualization.

Interviews (exemplary sources)	Summarized qualitative and inductive categories	Survey (figure)	Summarized quantitative categories	Triangulated category
- Educational service provider 2, pos. 44	appropriate and transparent measures	- Figure 5: Compliance of general COVID-19 protection measures	rather strict than weak concepts	#2 Appropriateness and feasibility of all implemented concepts and measures; meaningful and transparent presentation
- Event organizer 2, pos. 39		- Figure 6: Individual reasons for not attending major events during the pandemic		

TABLE 5 Triangulation of qualitative and quantitative data, factor: clearness, no interventions that are perceived as too intrusive to the experience; own visualization.

Interviews (exemplary sources)	Summarized qualitative and inductive categories	Survey (figure)	Summarized quantitative categories	Triangulated category
- Educational service provider 1, pos. 42	Ac-companying communication to create understanding	- Figure 3: During the event	- acceptance of short-term and low-threshold actions	#3 Rules with clear meaning, goal and purpose, no interventions that are perceived as too intrusive to the experience, prohibitions and obligations
- Educational service provider 2, pos. 34		- Figure 7: Expectations towards the organizer	- less acceptance of (intrusive) prohibitions and obligations	
- Security service provider 1, pos. 41				
- Event organizer 2, pos. 41				

why they suggest the customer journey as a sensible approach (see Table 6).

The triangulated results point in a similar direction to the existing studies on influencing social and institutional factors in particular (see Section 2.2). The six derived assumptions are supported by the data from the NORMALISE research project. Situational and individual factors are less evident in the data.

However, the results go beyond the existing studies in that they contain more indications of the importance of actively promoting rule and measure compliance through event management. The customer journey, which is presented here as an approach from practice to practice, so to speak, represents a concrete solution as to how this can be achieved communicatively and interactively across all event phases.

5 Conclusions, impact, and outlook

In the challenging context of the COVID-19 pandemic, where major events resumed under stringent conditions, the importance of rule acceptance and compliance escalated in the event industry. This area, previously under-explored, led to the pivotal questions of the present study.

- (1) How can the compliance of measures for visitor safety explicitly be taken into account in event planning and implementation? Compliance with rules and measures is influenced by various situational, individual, social, and institutional factors, which can change over time, such as the progression and timing of the pandemic. The data show:
- (2) Compliance of visitors is already in the minds of event organizers and their representatives as an essential element

of event planning and implementation, but is not always implemented consistently and realistically which largely depends on situational circumstances like dynamically changing regulations and requirements.

- (3) The respondents accept many of the measures prescribed during COVID-19 at a relatively high level and are also willing to follow them. This is connectable with the statements of experts that visitors must be actively and communicatively involved in the implementation of measures. The predominantly very small effect sizes of the Mann-Whitney U tests for comparing the two survey dates indicate, taking into account the fact that a large sample is involved, that compliance has changed between the two measurement dates, but that the change is only small.
- (4) The customer journey is an approach that is accepted in practice (at least in theory) for the communicative support and guidance of visitors before, during, and after the event, to encourage them to comply with rules and measures. However, there is still a lack of actual implementation here, which can be seen, for example, in the general lack of time available to many representatives of the event industry, particularly for long-term planning and approaches.

Our research findings, corroborated by triangulated data, underscore the critical importance of clear, sensible rules and consistently implemented and enforced concepts, especially in the realms of event management and safety. Interestingly, even sanctions appear to be both acceptable and expected by visitors. These insights align with previous research. However, it is paramount to emphasize that effective communication and the strategic integration of all concepts and measures are essential for

TABLE 6 Triangulation of qualitative and quantitative data, factor: communication; own visualization.

Interviews (exemplary sources)	Summarized qualitative and inductive categories	Survey (figure)	Summarized quantitative categories	Triangulated category
- Educational service provider 1, pos. 30	Customer journey as holistic communication approach	- Figure 2: Before the event	- acceptance of almost all measures	#4 Explanatory, honest and sensitive communication, relevance of communicative approaches during all event phases and in “unregulated” spaces; customer journey as a sensible approach
- Consultant 1, pos.48		- Figure 3: During the event		
- Event organizer 2, pos. 28		- Figure 4: After the event		
		- Figure 5: Compliance of general COVID-19 protection measures		
		- Figure 6: Individual reasons for not attending major events during the pandemic		

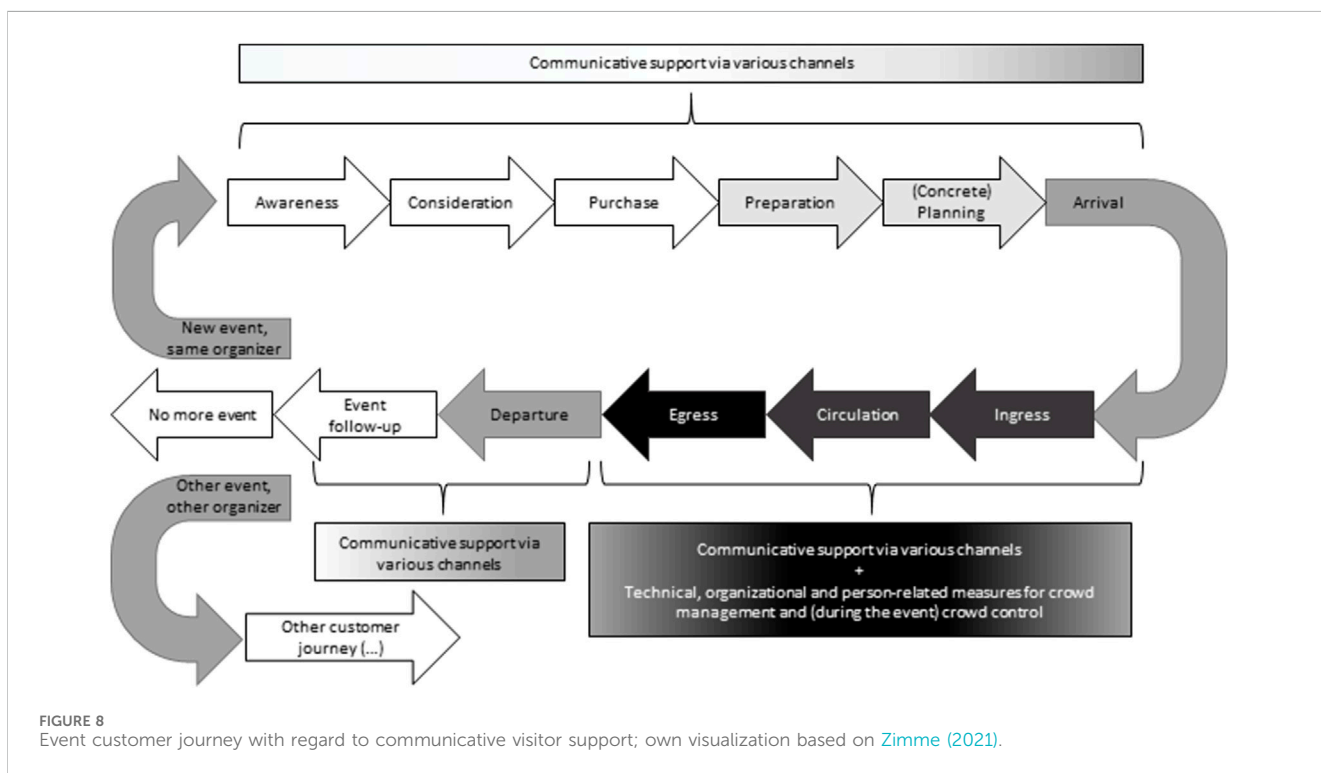


FIGURE 8 Event customer journey with regard to communicative visitor support; own visualization based on Zimme (2021).

their success. However, further analysis of the data could shed light on the factors contributing to those results and identify specific areas where targeted communication and clarification about rules could enhance awareness and foster more compliance. This approach is vital as it fosters active and honest communication, ensuring clarity and preventing individual misinterpretation of rules and measures. During the pandemic, this was particularly crucial due to the frequently changing and sometimes unclear political regulations. Event organizers had the chance to clarify which rules and concepts they were implementing and the rationale behind these decisions.

However, the findings also show that communication during the event is not perceived as enough. Rather, there is an emerging trend that communication should be much more comprehensive and accompany all phases of a major event. This is reflected in the customer journey approach (see Figure 8).

With this practical approach, the results of this study go beyond the previous ones. We have included this in the diagram and divided it into phases that start well in advance of an event and continue afterward. The assumption behind this, based on the results presented here, is that acceptance and compliance with hygiene and classic safety measures at events are more likely if they are continuously addressed in the communication and interaction between event organizers and guests and awareness of them has already been created before a ticket is purchased. One hope is that this will support the organizer in implementing a safe event and private and state security forces in implementing and enforcing measures. Some now consider it to be a sensible strategy before, during, and after an event because it provides continuous information and orientation, but possibly also because it gets event visitors used to being addressed and “steered” by

communication on a permanent basis. The fact that the customer journey probably has developed into an interesting approach in the area of communication of safety and security regulations for major events or the event industry, in general, could also be due to the circumstances of the pandemic. Because of social distancing, severely limited personal contact, and face-to-face conversations, some new communication strategies had to be found to convey rules, concepts, and measures in a transparent and meaningful way. In addition, some interviewees hope that visitors will be more actively involved if they can understand the meaning of the rules and measures and at the same time take more responsibility for the safe implementation of major events. This is particularly about a form of emancipation and less passivity on the part of event visitors. This means that they see themselves as part of the event safety and security production and contribute to it voluntarily.

Now that major events have been possible again for some time without pandemic-related, stricter conditions, the customer journey approach is still being discussed. Unfortunately, the integration of this concept into the planning of major events in Germany is currently still more of a theoretical than a practical matter, even if it would also be useful in relation to classic event safety and security issues. There are various reasons for this. Communicative strategies can be adapted to specific target groups relatively easily and at little cost. For example, current topics of inclusion and awareness at events as well as a broad diversity of target groups can be taken into account. In addition, part of the security production is shifted to visitors, who may then develop a greater willingness to get involved and take responsibility for the safety and security of events, particularly in times when there is a shortage of personnel in the security sector.

Data availability statement

The original contributions presented in the study are included in the article/[Supplementary Material](#), further inquiries can be directed to the corresponding author.

Author contributions

PS: Writing–review and editing, Writing–original draft, Visualization, Validation, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal Analysis, Data curation, Conceptualization. YS: Writing–review and editing, Writing–original draft, Visualization, Validation, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal Analysis, Data curation, Conceptualization. AS: Writing–review and editing, Writing–original draft, Visualization, Validation, Methodology,

Formal Analysis, Data curation. MS: Writing–review and editing, Writing–original draft, Visualization, Validation, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal Analysis, Data curation, Conceptualization. VB: Writing–review and editing, Writing–original draft, Visualization, Validation, Formal Analysis, Data curation. FF: Writing–review and editing, Supervision, Resources, Project administration, Funding acquisition, Conceptualization.

Funding

The author(s) declare that financial support was received for the research, authorship, and/or publication of this article. This article is based on data gathered within the research project NORMALISE (Non-pharmaceutical interventions and social context analysis for safe events), funded by DFG (German Research Foundation) between August 2021 and December 2022; research grant number 466313334.

Acknowledgments

The authors would like to thank all contributors, including interviewees, survey respondents, peer reviewers, and supervisors for their kind contribution to this research.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/frcmn.2024.1368506/full#supplementary-material>

References

- Bär, S., Kormann, L., and Kurscheidt, M. (2022). How nudging inspires sustainable behavior among event attendees: a qualitative analysis of selected music festivals. *Sustainability* 14, 6321. doi:10.3390/su14106321
- Bortz, J., and Schuster, C. (2010). *Statistik für Human- und Sozialwissenschaftler*. Berlin, Heidelberg: Springer.
- Bryman, A. (1988). *Quantity and quality in social research*. London: Unwin Hyman.
- Bryman, A. (1992). "Quantitative and qualitative research: further reflections on their integration." Editor J. Brannen (Aldershot: Avebury), 57–80. *Mixing methods: quantitative and qualitative research*
- Buchmann, A., and Lodde, B. (2017). "Die Gewährleistung von Ziviler Sicherheit bei Großveranstaltungen." Editors C. Gusy, D. Kugelmann, and T. Würtenberger (Berlin, Heidelberg: Springer), 391–423. *Rechtshandbuch zivile sicherheit*

- Challenger, R., and Clegg, C. W. (2011). Crowd disasters: a socio-technical systems perspective. *Contemp. Soc. Sci.* 6, 343–360. doi:10.1080/21582041.2011.619862
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Routledge eBooks. doi:10.4324/9780203771587
- Committee of Inquiry into Crowd Safety and Control at Sports Grounds (1985). *Interim report*. London: H.M. Stationery Office.
- Derrig, R. (2020). Was Menschen dazu bringt, auch strenge Regeln zu befolgen. *Pandemie zeigt Grenzen Nudging-Theorie*. https://bibliothek.wzb.eu/fulltext/journal-vt/wzb-mitteilungen/wm2020_168.pdf (Accessed January 5, 2024).
- Duschek, S., Gaitanides, M., Matiaske, W., and Ortmann, G. (2012). "Einleitung: Macht, die aus Organisationen kommt," in *Organisationen regeln*. Editors S. Duschek, M. Gaitanides, W. Matiaske, and G. Ortmann (Wiesbaden: VS Verlag für Sozialwissenschaften), 7–16.
- Elliott, D. (2006). "Crisis management in practice," Editors D. Smith and D. Elliott (London: Routledge Taylor and Francis Group), 393–412. *Key readings in crisis management: systems and structures for prevention and recovery*
- Elliott, D., and Smith, D. (1993). Football stadia disasters in the United Kingdom: learning from tragedy?. *Industrial Environ. Crisis Q.* 7, 205–229. doi:10.1177/108602669300700304
- Federal Ministry of Health (2023). Impfdashboard [vaccination dashboard. <https://impfdashboard.de/en/> (Accessed January 5, 2024).
- Flick, U. (2011). *Triangulation. Eine Einführung*. Wiesbaden: VS Verlag für Sozialwissenschaften.
- Frawley, S., and Scholenkorf, N. (2023). *Routledge handbook of sport and COVID-19*. Milton: Taylor and Francis Group.
- Gläser, J., and Laudel, G. (2010). *Experteninterviews und qualitative Inhaltsanalyse als Instrumente rekonstruierender Untersuchungen*. Wiesbaden: VS Verlag.
- Haghani, M., Coughlan, M., Crabb, B., Dierickx, A., Feliciani, C., van Gelder, R., et al. (2023). A roadmap for the future of crowd safety research and practice: introducing the Swiss Cheese Model of Crowd Safety and the imperative of a Vision Zero target. *Saf. Sci.* 168, 106292. doi:10.1016/j.ssci.2023.106292
- Hermann, D., Eberle, K., Hauck, N.-L., Schäfer, P., Schuhmacher, H.-G., Specht, C., et al. (2021). Corona und Compliance. *Monatsscr Kriminol. St.* 104, 321–340. doi:10.1515/mks-2021-0143
- Hough, M. (2013). Procedural justice and professional policing in times of austerity. *Criminol. Crim. Justice* 13 (2), 181–197. doi:10.1177/1748895812466399
- Kankainen, A., Vaajakallio, K., Kantola, V., and Mattelmäki, T. (2012). Storytelling Group – a co-design method for service design. *Behav. Inf. Technol.* 31, 221–230. doi:10.1080/0144929X.2011.563794
- Kuckartz, U., and Rädiker, S. (2022). *Qualitative Inhaltsanalyse. Methoden, praxis, computerunterstützung: grundlagentexte methoden*. Weinheim, Basel: Beltz Juventa.
- Le Bon, G. (1895). *Psychologie des foules*. Paris: F. Alcan.
- Mayring, P. (2022). *Qualitative content analysis: a step-by-step guide*. Los Angeles, London, New Delhi, Singapore. Washington DC, Melbourne: SAGE.
- Miles, L., and Shipway, R. (2020). Exploring the covid-19 pandemic as a catalyst for stimulating future research agendas for managing crises and disasters at international sport events. *Event Manag.* 24, 537–552. doi:10.3727/152599519X15506259856688
- Purves, R. I., Maclean, J., Rocha, C., Philpott, M., Fitzgerald, N., Piggin, J., et al. (2023). Attending sporting mega-events during COVID-19: mitigation and messaging at UK EURO 2020 matches. *Health Promot Int.* 38, daac176. doi:10.1093/heapro/daac176
- Rathbone, J. A., Stevens, M., Cruwys, T., and Ferris, L. J. (2022). COVID-safe behaviour before, during and after a youth mass gathering event: a longitudinal cohort study. *BMJ Open* 12, e058239. doi:10.1136/bmjopen-2021-058239
- Reid, S., and Ritchie, B. (2011). Risk management: event managers' attitudes, beliefs, and perceived constraints. *Event Manag.* 15, 329–341. doi:10.3727/152599511X13175676722528
- Schönefeld, M., Schulte, Y., Schütte, P. M., Binder, M., Porten, M., Schmitt, A., et al. (2023). Planungs- und Entscheidungshilfe im Rahmen der Genehmigung von Großveranstaltungen unter pandemischen Kontextbedingungen. norm.uni-wuppertal.de/fileadmin/site/normalise/daten/NORMALISE_PEH.pdf (Accessed January 4, 2024).
- Schönefeld, M., Schütte, P. M., Schulte, Y., and Fiedrich, F. (2022). COVID-19 governance in the event sector: a German case study. *Eur. J. Secur Res.* 7, 117–137. doi:10.1007/s41125-022-00088-6
- Schütte, P. M., Schönefeld, M., Schulte, Y., and Fiedrich, F. (2023). What counts, safety and security or hygiene? Suggestions on the reopening of major events under pandemic conditions in Germany. *IJEFM* 14, 141–156. doi:10.1108/IJEFM-04-2022-0032
- Schütte, P. M., and Willmes, S. U. (2022). Production of event security in Germany – empirical findings on perceptions of interorganisational collaboration between various security actors. *IJEFM* 13, 457–471. doi:10.1108/IJEFM-11-2021-0092
- Seyd, B., and Bu, F. (2022). Perceived risk crowds out trust? Trust and public compliance with coronavirus restrictions over the course of the pandemic. *Eur. Pol. Sci. Rev.* 14, 155–170. doi:10.1017/S1755773922000078
- Shipway, R., and Miles, L. (2020). Bouncing back and jumping forward: scoping the resilience landscape of international sports events and implications for events and festivals. *Event Manag.* 24, 185–196. doi:10.3727/152599518X15403853721376
- Still, K., Papalexli, M., Fan, Y., and Bamford, D. (2020). Place crowd safety, crowd science? Case studies and application. *JPMD* 13, 385–407. doi:10.1108/JPMD-10-2019-0090
- Stott, C., Hoggett, J., and Pearson, G. (2012). Keeping the peace: social identity, procedural justice and the policing of football crowds. *Brit. J. Criminol.* 52, 381–399. doi:10.1093/bjc/azr076
- Stübig, S. (2015). *Flexibilität und Legitimität in der ILO*. Wiesbaden: Springer Fachmedien.
- Tyler, T. R. (1990). *Why people obey the law*. Princeton University Press.
- Tyler, T. R. (2006). *Why people obey the law*. Princeton University Press.
- Tyler, T. R. (2011). *Why people cooperate: the role of social motivations*. Princeton University Press.
- Vendelo, M. T. (2019). "The past, present and future of event safety research," in *A research agenda for event management*. Editors J. Armbricht, E. Lundberg, and T. D. Andersson (Cheltenham, UK: Edward Elgar Publishing), 23–34.
- Zimme, R. (2021). Die Last Mile. Müssen die Grenzen des Formalen auch die Grenzen des Sinnvollen sein? *Present. A. T. 7th IBIT Conf. event Secur. Saf. Berlin*.
- Zimmermann, B. M., Fiske, A., McLennan, S., Sierawska, A., Hangel, N., and Buys, A. (2022). Motivations and limits for COVID-19 policy compliance in Germany and Switzerland. *Int. J. health policy Manag.* 11, 1342–1353. doi:10.34172/ijhpm.2021.30