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# The Zika virus crisis during the 2016 Rio Olympic Games: a media cover analysis

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During times of crisis, media coverage increases significantly, shaping public opinion and creating images of the places where these events occur. In this context, this paper analyses the Zika virus epidemic in Brazil, a past crisis that gained increased media attention during the months leading up to the 2016 Olympic Games in Rio, to identify the cognitive and affective components of published information. To this end, we subjected 1034 headlines (from digital editions of leading Spanish daily newspapers) related to tourism security at the Olympic Games to content analysis and employed a series of attributes to approach the cognitive and affective components of the information analysed. The results reveal that alarmist and negative headlines are more frequent when security issues, particularly citizen security, are reported. News headlines about the Olympic Games are generally descriptive and more positive. In the field of health security, citation-type headlines—those citing information provided by experts or authorities—are used more frequently. By analysing a past crisis, this study has several implications for Destination Management Organisations (DMOs) dealing with such events. In this context, we highlight some good practices to maximise informative news and minimise alarmist ones.

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## Introduction

The information people have about a destination and the feelings and sensations they associate to it—destination image—is a critical factor for their travelling directions (Kozak and Rimmington, 1999; Leung and Baloglu, 2013). Such image is formed and constantly changed by a myriad of organic and induced stimuli (Gartner, 1994), amongst which is the media coverage of events. Therefore, any tourist destination is subject to the impact of negative events, such as infectious diseases, terrorist attacks, crime, political upheaval, and natural disasters (Slevitch and Sharma, 2008). Safety is currently one of the main factors influencing the decision-making process when choosing a tourist destination (Pizam and Mansfeld, 1996). Travellers demand attractive places and quality services in safe environments to the extent that they modify their plans if they perceive that a particular destination has become dangerous (Kozak et al., 2007). Not by chance, destination safety is included as a qualifying factor within Ritchie and Crouch's (2003) destination competitiveness from a sustainable tourism perspective model.

Tourism consumption is a voluntary act that is sensitive to negative publicity of destinations, making the perception of risk largely dependent on media coverage of a certain negative event. Given the existence of real or potential risks, the search for information is one of the main strategies to reduce the uncertainty in deciding on the destination to be visited (Fuchs and Reichel, 2011). Security has become a fundamental component of the public domain, and the media is a key factor in its social impact. According to Slevitch and Sharma (2008, p. 87), “risk handling is largely information handling”.

It is very difficult to learn from a crisis when it is happening. It is necessary to conduct a review after some time has passed and there is some perspective (Faulkner, 2001). In this context, the present investigation analyses the cognitive and affective components of the news published by the media with the largest circulations in Spain during the Zika virus crisis in the pre-Olympic stage in Rio 2016. Specifically, we analyse the cognitive component of the information through three attributes: publication section, journalistic genre, and type of headline. The affective component is analysed according to the approach or tone of the headline (positive, negative, or neutral) and the type of expression used (descriptive, alarmist, entertainment, and evaluative-stereotyped).

By analysing the media coverage of a health crisis in a specific destination for a specific tourist emitting market, the paper presents a deepened understanding of the potential effects of such coverage. In this context, the research offers useful insights for destination management organisations on how to deal with negative events and potentially mitigate or neutralise the negative effects they might cause on destination competitiveness via destination image.

## Agenda-Setting and place perceptions

A direct relationship exists between the media emphasis on a topic and the increase in concern about it in public opinion (Álvarez and Toubes, 2017; Wanta and Ghanem, 2007). The way in which news is disseminated and amplified has a significant effect on the perception of social issues (McCombs and Reynolds, 2002; Scheufele, 2000). Intensive news coverage can increase perceived susceptibility and severity, sometimes reaching the level of panic (Kelly et al., 2015; Young et al., 2008).

Social amplification is greater when it comes to news with a high level of controversy. The gap between media coverage—how the event is framed—and the first-hand experience of the people becomes particularly clear when controversial issues are at stake (Shoemaker and Reese, 1996). Controversial news coverage

attracts the press and readers and strongly predicts the volume of online information searches (Weeks et al., 2012), and this trend is exacerbated in the context of social media. In this context, Sharma et al. (2017) found that misleading posts about the Zika virus were far more popular than posts dispensing accurate, relevant public health information about the disease.

Traditional agenda-setting theory explores the impact of mass media on the public's attention focus. The media tell us what to think when the salience of public issues in the news varies (McCombs et al., 2014). Perse (2001) highlighted the influence of agenda-setting on society and concluded that individuals assign more or less importance to information depending on how the news is presented and framed. Therefore, to reach a larger audience and have a greater impact, the media employ various frameworks for presenting issues (Scheufele and Tewksbury, 2006). This can result in a potential conflict of interest with tourist destinations, as their managers aim to present their destinations in a favourable light, which may conflict with media outlets that prioritise sensationalist headlines.

This is not exclusive to destinations' relationships with news outlets. In the context of the cinematographic industry, for example, Kim (2011) observes that while Destination Management Organisations (DMOs) are interested in attracting tourists, or the right type of tourists, to the destination, filmmakers aim to make a commercially appealing film, which not necessarily involves showing off the destination in a good light. In this context, several authors (Croy, 2010; Hahm and Wang, 2011; Heitmann, 2010) argue that the key to a mutually beneficial relationship between destinations and film studios is seeking to align those interests. In the context of news media, however, this alignment is more difficult, if possible at all, to achieve, as news coverages are, in essence, limited by their informative role, which must be at the core of their agenda.

The configuration of the second-level agenda suggests that the tone and perception used to cover an issue can also affect the way people think about that topic (McCombs et al., 1997). McCombs et al. (2014) understood framing as a part of agenda-setting that operates at a second level. There is a debate about it; according to Scheufele and Tewksbury (2006, p. 11), “framing is based on the assumption that how an issue is characterised in news reports can have an influence on how it is understood by audiences”. Understood as a macro construct, the term “framing” refers to the mode of presentation that a journalist uses to present information in a way that relates to the underlying schemes of the audience (Shoemaker and Reese, 1996). According to McCombs et al. (2001), framing focuses not on the issues that are selected by the media to cover, but on the particular ways in which such issues are presented and on how public problems are formulated for the audience.

## The role of media coverage on destination image

**Main conceptualisations.** The way news is presented influences the formation of the image tourists have of a destination. Indeed, such images are formed and constantly transformed by a combination of personal and stimulus factors. Personal factors are the social and psychological characteristics of an individual, while the stimulus factors come from exposure to a myriad of sources (Baloglu and McCleary, 1999), which Gartner (1994) conceptualises in a continuum ranging from overtly induced to organic. As more recently conceptualised by Cardoso et al. (2019), induced and organic stimuli are processed in the working memory and feed the destination image in the long-term memory, which in turn, shapes how new stimuli are interpreted.

The result is a multidimensional construct that has been conceptualised through many perspectives. For instance, Fakeye and Crompton (1991) state that destination image comprises an organic dimension—the image one holds before any contact with marketing material from the destination—an induced dimension—the result of destination marketing efforts—and a complex one—a combination of the previous two, which can also include one's first-hand experience in the destination. Baloglu and McCleary (1999), in turn, suggested that there are three types of images: cognitive, affective, and overall image. Cognitive—or perceptual—image refers to the beliefs and knowledge individuals have of a destination (Crompton, 1979). Affective image refers to the emotions or attachments individuals have towards a destination. Overall image is a combination of the two.

Proposing a more comprehensive framework to measure destination image, Echtner and Ritchie (1991) conceptualise it as a construct composed of functional (equivalent to cognitive) and psychological (equivalent to affective) characteristics, where each can be either attributes or holistic images. In this context, prices and weather are functional attributes; while peoples' friendliness, hospitality, and place atmosphere are psychological attributes. The destination's general landscape or skyline is a functional holistic feature, and its general aura is a psychological holistic feature. The authors still propose a third dimension: common, comprising functional and psychological attributes through which destinations can be compared, and unique, comprising functional (iconic monuments) and psychological (unique auras, e.g., Paris, city of love) elements that can only be experienced in a certain destination.

Looked at through any of these conceptualisations, the destination image is crucial for destinations' competitiveness (Kozak and Rimmington, 1999; Leung and Baloglu, 2013) because it serves as the basis for travellers' destination choice (Woodside and Lysonski, 1989). Therefore, places strive to enhance their images through marketing and public relations efforts, which are the induced sources. On the other hand, organic sources encompass diverse channels of information, such as cultural products including literature and films, as demonstrated by an extensive body of literature (e.g., Araújo, 2012; McClinchey, 2015; Shani et al., 2009; Tzanelli, 2004), comments on social media, and naturally, news.

It should also be noted that media coverage plays a significant role in building the tourist gaze. Rather than the knowledge about and feelings associated with the destination, the tourist gaze refers to the way tourists view the places they visit, including the people within them, attempting to illustrate an essentially visual experience (Urry, 1990). In this context, in addition to the personal factors outlined in Baloglu and McCleary's (1999) conceptualisation, a tourist's gaze shapes the way they interpret a destination. Considering Cardoso et al. (2019) model, the tourist gaze can be seen as the elements of a person's long-term memory that condition how they perceive a place and its people, ultimately influencing the interpretation of their overall experience.

**The effect of media coverage.** Naturally, like destination image, the tourist gaze is also influenced by the information and stimuli to which one is exposed throughout their lives, both from the tourism industry and general media. For instance, in the Bahamas, Palmer (1994) observes that the tourism industry perpetuates colonialist ideologies, which prevents locals from defining their own identity. Regarding the role of the cultural industry, Freire-Medeiros and Menezes (2013) show that films, as well as news media, shape the gaze of tourists visiting Rio de Janeiro favelas, leading them to associate these places with poverty and drug trafficking. Media coverage has a particularly great potential

to shape the tourist and the general gaze on a destination in the context of mega-events when the place naturally attracts an atypical volume of attention. In these instances, internal issues, previously known almost exclusively by residents, might be exacerbated and disseminated around the world.

For example, as shown by Buarque (2015), the media coverage of Brazil during both FIFA World Cups the country hosted (1950 and 2014) resulted in an increase of visibility for the country, but also in a shift in the frames used to describe it—from economics and culture to politics—as well as a change in tone, from positive to negative. Similar results were found by Schallhorn (2019) when exclusively analysing the country's media coverage in 2014 and its effects on the German audience. Namely, the study showed that the most frequently reported—nature and safety—and the predominantly negative—quality of life and economy—topics and media messages were the ones that most influenced people's perceptions of Brazil.

This effect is not always predominantly negative, however, even in other developing countries. In the case of South Africa—host of the 2010 World Cup—for instance, Lepp and Gibson (2010) found that associations with sports and perceptions of South Africa as a modern country increased after the event, while associations with racial issues decreased. The results of other studies in the same context, however, suggest that this effect, as well as the tone of the messages, can vary according to the countries' historical relationship. In the case of British media, for instance, Hammett (2011) identifies the themes Afro-pessimism, African essentialism and (neo-)colonialism as contributing causes to the lower-than-expected audience for the event.

In summary, the media can influence the cognitive/functional aspects of destination image not only through the content of the news but also through the way it is presented. It can also potentially shape unique images by associating events and characteristics to the reported places. As such, it is an important autonomous stimuli source that directly affects potential travellers' organic image of a destination. Given its impact, news coverage is a critical factor for tourist destinations' performance, particularly in times of negative events or crises, when destination managers need to make informed decisions to minimise damages. This is particularly important because negative events have a significant potential effect on travellers' perception of safety within a destination, which is a major concern when choosing a place to visit.

Within Echtner and Ritchie's (1991) conceptualisation, safety can be seen both as a functional and a psychological factor. Safety as a functional attribute refers to knowledge acquired about the homicide rate, or the spread of a disease in a destination, for instance. As a psychological attribute, it refers to how secure one feels in the place, regardless of the existence or absence of a real threat. The distinction is not always clear, and media coverage can potentially contribute to confusion or to a disproportional risk perception through an exaggerated depiction of a negative event. Given its relevance to the present study, the influence of media on destination risk perception is discussed in the next section.

**The media and destination risk perception.** The risk that people associate with tourist destinations has been extensively studied within the tourism literature. Several authors have addressed different dimensions of risk perception, and most mention media as one of the sources affecting it. In this context, Korstanje (2009) discusses risk theory in the context of travel. The author concludes that security needs are highly affected by place attachment and that risk perceptions associated with the socialisation process may explain differences in anxiety among tourists.

Investigating heterogeneity and safety perceptions among international tourists, Seabra et al. (2013) segmented the tourist market into six groups according to their main fears—“all risks concerned, satisfaction apprehensive, multiple risks concerned, health and personal risks concerned, terrorism and turmoil concerned and materialists” (p. 508). Additionally, Seabra et al. (2014) conclude that exposure to negative incidents (i.e., crime and terrorism) through media can cause an inflated perception of risk, impacting pre-purchase involvement and general safety concern.

After conducting a comprehensive literature review on risk perceptions in the context of travel, Yang and Nair (2014a) propose a conceptual model that classifies travel risks as functional, physical, financial, social, and psychological, all of which affect travellers’ perceived risk and, consequently, their travel behaviour. Additionally, Yang and Nair (2014b) observed that much attention has been placed on the objective component of risk perception and urged authors to investigate its subjective side, considering risk perception as socially constructed, and the fact that the perception of risk endures even after the threat is removed. This idea of a socially constructed risk perception is in line with Baloglu and McCleary’s (1999) definition of destination image, affected by one’s personal and social characteristics, as well as by external stimuli. Therefore, considering the destination image conceptualisations addressed in the previous section (i.e., Echtner and Ritchie, 1991; Gartner, 1994), it can be inferred that the media, as an autonomous source, can affect every category of travel risk.

Contributing to filling this gap by considering the subjective component of risk perceptions, Wolff and Larsen (2016) examined the role of flux and permanence of risk perceptions amongst tourists. The study confirmed the role of media in shaping destination risk perceptions. Specifically, the authors found that “when recalling (or sampling) memories from other countries, participants are more likely to recall risky events, simply because these are the ones portrayed in the media” (p. 589). Finally, Wolf et al. (2019) examined findings from psychometric risk research and concluded that diverging definitions of risk cause a series of problems in this field. Namely, perceived risk is often affected by various heuristics and biases, such as the “home is safer than abroad” bias, which can lead to erroneous conclusions.

Given the addressed role of media in shaping destination image, and especially, destination risk perceptions, it is essential to deepen the understanding of how negative events are covered by media and, consequently, how they might affect destination image and competitiveness. Considering this scenario, the present paper analyses the case of the Zika virus in Brazil during the Olympic Games, which is addressed in more detail in the next section.

### **Zika virus in Brazil during the Olympic Games**

Brazil is the largest tourism market in South America. With 1.8% of international tourism revenue in 2019, the country ranks fourth in the Americas in terms of international tourist arrivals, with 6.353 million visitors (World Tourism Organization, 2021). The number of tourists visiting Brazil has grown an average of 2.7% annually between 2012 and 2017 (Ministerio do Turismo de Brasil, 2018). In terms of destination image, Bignami (2002) notes that Brazil has a stereotyped image abroad, focused on archetypal images of some Brazilian cities, such as paradise, carnival, sex and exoticism or mysticism. However, Brazil is also strongly associated with danger and risk. Travel advisories issued by the United States, the second country in terms of the number of international tourists to Brazil after Argentina, maintain a permanent alert regarding the country. They advise American travellers to “exercise increased caution,” and warn of a high level of

criminal activity, especially armed robberies, kidnappings, and sexual assaults (BCA, 2018).

Regarding the Zika virus threat, the first outbreak of infection in Brazil was detected in May 2015. The virus soon had a great global impact, as it spread through Brazil and 22 other surrounding countries and territories (Petersen et al., 2016). The virus aroused great media interest due to cases of neurological malformations in newborns of infected mothers. The National Travel Health Network and Centre (2016) announced the real risk of Zika virus infection in Brazil and the danger of travelling to the country: “pregnant women or [women] planning to become pregnant should consider avoiding travel to this country until after the pregnancy”. On February 1, 2016, the World Health Organization (WHO, 2016a) announced that the Zika virus outbreak constituted a “Public Health Emergency of International Concern.”

Some members of the scientific and health community were concerned about the increased risk for all those who visited Brazil (i.e., tourists and athletes), which had repercussions both in the media and for the authorities in tourists’ countries of origin. The stated probability of *Aedes Aegypti* mosquito bites during the 3-week period of the Olympic Games in August was 3.5%, compared to the 99% probability per individual traveller who spent a week in Rio during Carnival, in February. Considering the number of infections in 2015—27,146—the probability was much lower: 3.6/100,000 during Carnival and 1.8/1,000,000 during the Olympics (Burattini et al., 2016). Nevertheless, the question was raised as to whether the celebration of the Olympic Games would favour the spread of the virus. In this context, in the days prior to the beginning of the Olympics, there was no agreement on the convenience of holding the games, postponing them, or simply cancelling them.

Attaran (2016) stated that the 2016 Olympic and Paralympic Games must be postponed, moved or both as a precautionary measure. Codeço et al. (2016) argued that Zika virus was not a reason to postpone the Olympic Games since the month of celebration was August, which was winter in Rio, a time when vector-borne diseases were at minimum risk. Moreover, the spread had most likely already occurred during Carnival, when Zika activity in Rio de Janeiro was at its peak.

The coincidence of the Zika virus alert with the celebration of the Olympic Games in Rio de Janeiro increased the impact of the news and amplified its social effects. As a result, tourist security and health security became critical factors in shaping the country’s image before and during the Olympics (Gibson et al., 2008). While hosting the Olympic Games represents an opportunity to improve the destination’s image, there is also a risk that the media may focus on negative aspects. The 2010 World Cup in South Africa and the 2012 Olympics in London serve as examples of how the message can amplify or highlight certain negative aspects of the destination, particularly related to security conditions (Hammett, 2014; Schroeder and Pennington-Gray, 2014).

For the WHO (2016b), communication in the context of the Zika virus should prioritise two groups of audiences: the media—both in affected and unaffected countries—and the tourism sector, travel industry, and travellers themselves. Media and social media are essential channels for rapid reach to large populations and for spreading accurate information. If not effectively engaged, they may also be powerful sources of inaccurate or rumour-based information (WHO, 2016a). In addition to the usual image problems that Brazil already had, such as insecurity and delinquency, Zika appeared to be the most disturbing element.

### **Methodology**

The study examines the media coverage of online newspapers with the largest circulations in Spain. Spanish publications have

been selected because Spain is one of the eight countries that make up Brazil's high-priority market group, along with the United States, Chile, Argentina, Germany, Italy, France, and the United Kingdom (Instituto Brasileiro do Turismo, 2009). Spain, Argentina, and Chile are the countries in this group that maintain the closest cultural and historical links with Brazil (Karl, 2018).

The universe of data from this research is the news related to the Zika virus infection, the Rio 2016 Olympic Games, the tourism sector, and security. The digital editions were chosen because of their greater dissemination, ease of access, and immediacy. The unit of analysis was the headlines. The headings are the first level of information for readers and can be presented as an autonomous text because they do not require a complementary explanation (Sánchez-Aranda, 2005; Van Dijk, 1990). A headline's main value lies in grabbing a reader's attention by fulfilling both an informative and an appellative function (Hurtado-González, 2009). The analysis of headlines allows the reader to evaluate the elements of the message on which greater emphasis is placed; that is, certain aspects of the news are highlighted to provoke an interpretation, a moral evaluation, or a treatment recommendation for the matter discussed (Entman, 1993).

The decision to focus solely on the analysis of headlines is also supported by some observations about readers' behaviour. For example, a report from the Spanish Association of Information Media (Asociación de Medios de Información, 2017), reveals that more than half of the Spanish audience reads only the headlines and rarely reads the entire article. Furthermore, readers often need a subscription to access the full article, but they can still view sensationalist headlines. Frequently, the catastrophic scenario implied by these headlines does not accurately represent the situation described in the article (click-bait). Nonetheless, given the proportion of readers who only glance at the headlines, they are likely a significant source of information and stimuli for shaping the destination image for potential visitors.

Access to the data was obtained through the Brazilian Embassy in Spain, which collects news related to Brazil or mentions of the country's name or citizens published in the most popular newspapers in Spain. Specifically, the Press and Dissemination Section of the Embassy collects news daily from digital editions of five generalist newspapers (*El País*, *El Mundo*, *La Razón*, *ABC*, and *La Vanguardia*) and three economic newspapers (*Expansión*, *Cinco Días*, and *El Economista*). Economic newspapers were considered along with generalist newspapers because, as they are the media from which news is collected daily by the Press and Dissemination Section of the Brazilian Embassy in Spain, they are what they consider relevant for the country's public opinion on Brazil.

The carefully edited information provided by the digital editions of daily newspapers has an important influence on the overall image and affective image of tourist destinations (Li et al. 2009; Tan and Chen, 2012). The data collection period was fifteen months, from February 12, 2015, to June 8, 2016. In total, 1034 press headlines were analysed and classified.

The collected data was later subjected to a content analysis. File cards were created for each news item, with each card including an analysis of the selected study categories. Excel spreadsheets were used to keep records of these cards. The analysis established whether each news piece had a direct or indirect relationship with tourism. News items that covered the tourism and leisure sector (e.g., data on arrivals, overnight stays, and tourist movements) were considered directly related, while those that mentioned tourism in some way but were not about the sector were considered indirectly related.

Three attributes were used to approximate the cognitive component of the information: publication section, journalistic genre, and type of headline. There were no fixed patterns for

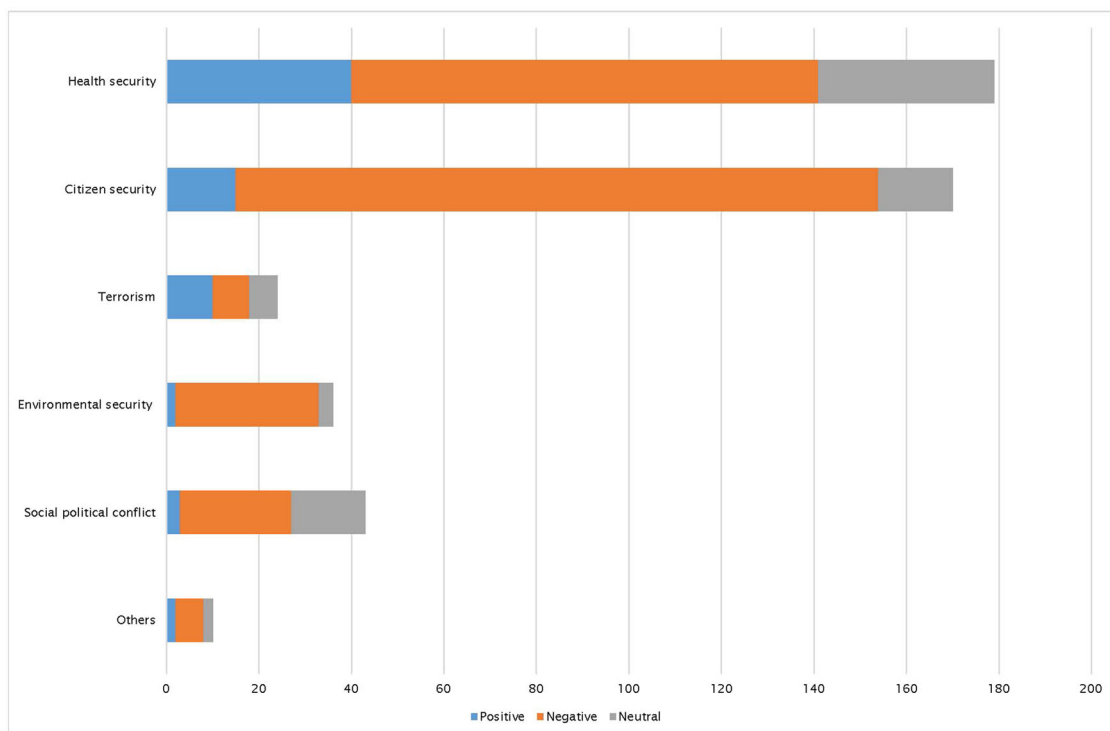
classification, as each newspaper decides on the number of sections and their respective appellations. In this context, the publication sections were classified into ten usual categories of sections found in newspapers, including health, society, Olympics, sports, culture, tourism and leisure, crime news, business, national, and international. The culture section included news related to various fields of arts, such as literature, cinema, theatre, music, or any other cultural manifestation. The society section includes news related to the current social life that is not framed in other more specific sections.

The study distinguishes five categories of "journalistic genre": interview, news, report, column, and opinion. According to Santamaría (1991) and Martínez-Albertos (1993) classifications, this research differentiated five categories of "type of headline": informative, appellative, expressive, thematic, and citation. Informative headlines inform readers and present data objectively; appellative headlines surprise readers and focus on the most striking or surprising aspect of the news; expressive headlines do not give details about the event because they presume that readers already know it, they use single words, often with exclamation or question marks, to catch the reader's attention; thematic or enunciative headlines state the topic of the information in a generic and brief way; and citation headlines emphasise the words of experts, authorities or people involved in the information, either as a direct or indirect quote.

The affective component of information was analysed through two attributes: "evaluation of the news" and "type of expression". The evaluation of the news (positive, negative, or neutral) reflects the tone or approach with which the news is narrated. The use of codes or keywords as a filter to classify the news according to this attribute (for example, "no", "never", "dead") was considered, but ultimately discarded for not providing certainty concerning the tone of the news. The classification of the headlines as "positive", "negative" or "neutral" tone) was based on the subjective assessment of the researchers. The tone evaluation has been performed headline by headline. For example, news items about Zika were considered positive when they addressed achievements, decreased threats, or advances in treatments, while they were considered negative when addressing increased threats. The two researchers carried out the classification of the headlines independently to improve the results' robustness, and the inter-researcher level of agreement (Cohen's kappa coefficient [ $\kappa$ ]), was calculated. The resulting value of  $\kappa = 0.82$  indicated that the level of agreement between the researchers was very high.

The second attribute used to analyse the affective component of information, "type of expression," includes four categories: descriptive, entertainment, evaluative-stereotyped, and alarmist. The descriptive headlines present information without any value judgement, and the informative element prevails without any type of bias being identified. Entertainment-style headlines provide elements of humour or distraction, but they have a testimonial presence in the field of tourism security. Evaluative-stereotyped headlines involve the media making an explicit or implicit evaluation of the facts or taking a stance on the news, which may include some of the stereotypes associated with Brazil's image (Bignami, 2002). Alarmist headlines use a catastrophic tone and often include sensational language that may lead to an imprecise or exaggerated interpretation of the news.

In terms of theme, the analysis and classification of the attributes of the information and thematic categories were carried out according to the expert judgement of the researchers. News items were classified into two main subjects: tourism security and Olympic Games. Headlines referring to both subjects were classified in the thematic category considered dominant. Subthemes were identified for each major subject. In the category of tourism security, subthemes included health security, citizen security,



**Fig. 1** Number of news articles on tourism security subthemes and their tone (positive, negative or neutral).

terrorism, environmental security, and social–political conflict. In the Olympic Games category, subthemes included infrastructure, attendees, security, economic impact, local population, sport, and spectacle.

Content analysis is the main tool used in agenda-setting and public opinion polls (Aruguete, 2017), making it appropriate for the present investigation. As content analysis encompasses systematically describing and categorising information components, it allows objective comparison of news content and study of its evolution (Wimmer and Dominick, 2013). A review of the state of the art on descriptive content analysis in communication (Hammett, 2014; Repiso et al., 2011; Wang et al., 2015) allowed us to identify the most recurrent categories (information components) in the analysis of countries’ and tourist destinations’ images.

**Results**

Out of 1034 news items analysed, 863 were published in generalist newspapers and 171 were published in economic newspapers. The distribution of news by specific newspapers is as follows: 455 were published in *La Vanguardia*, 173 in *El País*, 137 in *El Economista*, 109 in *ABC*, 101 in *El Mundo*, 25 in *La Razón*, 24 in *Expansión*, and 10 in *Cinco Días*. The news items were distributed relatively evenly across the various sections of the newspapers, with the highest number of headlines published in the Culture (13.9% of the news) and Olympics (13.8%) sections. Other sections in which headlines were frequently published included Crime news (12.2%), International (11.6%), Society (11.2%), and Health (11.2%). The Sports section accounted for only 8.9% of the headlines.

Most of the headlines were included in the news journalistic genre (70.2%). The remaining were divided between the column (12.9%) and report (12.1%) genres. The opinion and interview genres only represented 2.5% and 2.2% of the headlines, respectively. Out of the 1034 headlines, 431 had a positive tone,

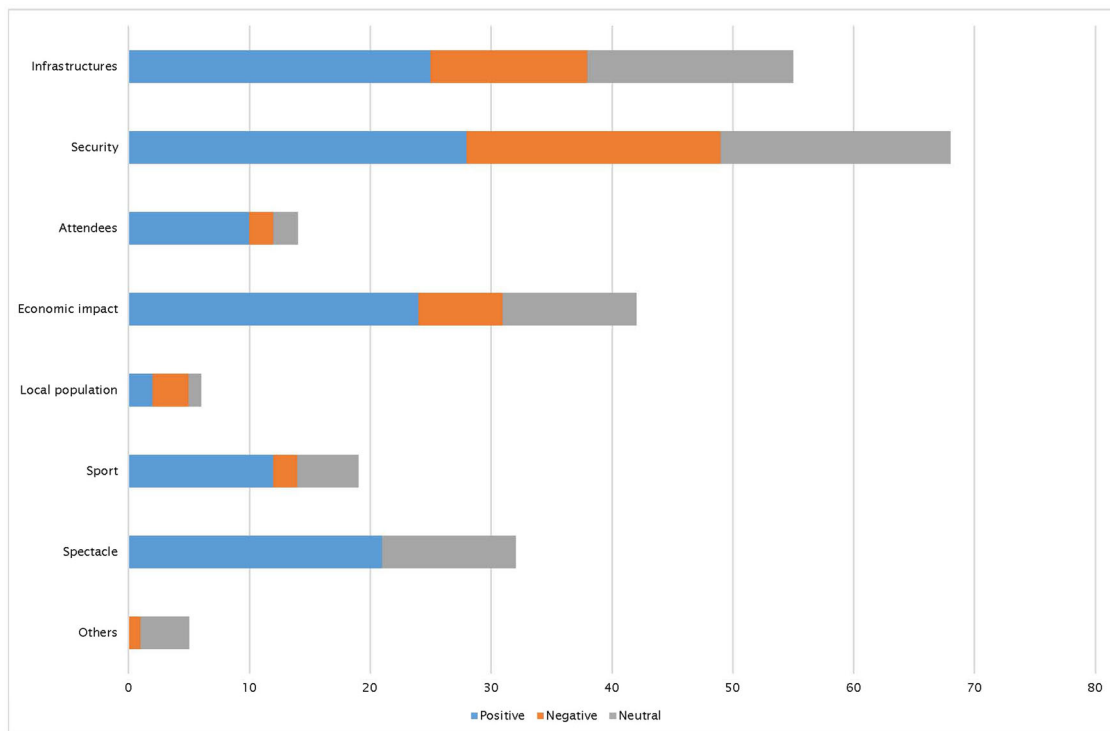
representing 41.7% of the total; 378 had a negative tone (36.6%), and 225 headlines were evaluated as neutral (21.8%).

Out of 1034 headlines, 462 addressed issues related to tourism security, representing 44.6% of the total. Health security (179 news) and citizen security (170 news) were the most frequent subthemes. Figure 1 shows the tone of the news on tourism security, which is markedly negative for the two main subthemes, particularly for citizen security.

The Olympic Games were the subject of 241 headlines (23.3% of the total). In terms of subthemes, security, infrastructure, economic impact, and spectacle were the most recurrent. Regarding the tone, headlines addressing the Olympic Games were mostly positive. Only when the headlines addressed security issues did a negative tone appear (see Fig. 2).

Headlines on security with a negative tone emphasised the dangers, contributing to an increased perception of risk. For example, *El País* published the headline “Youth gangs check security on the beaches of Rio” on May 24, 2015, regarding the escalation of crime. regarding the Zika virus, on January 20, 2016, the same newspaper published the headline “The situation caused by the Zika virus is dramatic”. In contrast, headlines related to the Olympic Games had a predominantly positive tone (50.6%), while only 20.3% had a negative tone. Nevertheless, headlines related to security in the organization of the Olympic Games had more negative connotation (31%).

The most frequently used type of headline was informative (59%), followed by appellative (24.1%), expressive (8.3%), and thematic (7.4%). Citation-type headlines only accounted for 1.2% of the total. Dávora et al. (2004) pointed out that in the face of extraordinary and serious events, a more informative-descriptive perspective is typically adopted. In the area of tourism security, informative headlines were still the most common (56.4%), but there was a higher percentage of expressive headlines (17.8%). Conversely, appellative headlines, which are more sensationalist, were somewhat less frequent (14.9%). The informative type remained predominant in the subtheme of citizen security, but



**Fig. 2** Number of news articles by Olympic Games subthemes and their tone (positive, negative or neutral).

there was a considerable increase in expressive-type headlines (30.6%), which often referred to the high level of crime. In the field of health security, headlines conveyed the opinions of famous people. For example, in an interview published on May 31, 2016, *El País* quoted NBA player Pau Gasol expressing his concerns with the headline “I’m considering whether or not to go to the Olympic Games because of the Zika threat”.

In the headlines related to health security, the informative type remained prominent, but the citation type was much more frequent (30.6%). Headlines on health security tended to report the situation more objectively and usually conveyed notifications and warnings from health institutions. Southwell et al. (2016) have pointed out that public health authority announcements may help drive peaks in coverage and warrant attention, particularly when the source of information is trusted and credible. News articles that incorporate communications from relevant health institutions can help increase the perception of quality and credibility. The media leverage the alert of an institution such as the WHO to increase dissemination of the news and achieve greater significance (Schwartz et al., 2012).

Table 1 summarises the “type of expression” used in the headlines in the two main topics of study: tourism security and Olympic Games, differentiating whether they referred to these topics directly or indirectly. In total, 391 headlines addressed tourism security (26 directly, and 365 indirectly), and 242 were focused on the Olympic Games (51 directly, and 191 indirectly). Out of 1034 headlines, over half were descriptive (54.4%), and 22.4% were alarmist.

The percentage of descriptive headlines was similar in the analysis by subject. However, the number of alarmist-type headlines showed notable differences depending on the subject: when they addressed the Olympic Games, alarmist headlines dropped to 16.5%, while amongst those addressing tourism security, they increased to 46.8% (Fig. 3). There was a tendency towards alarm when it came to security in tourism. Most headlines within the subthemes of health security and citizen security

		Tourism Security	Olympic Games	Others
Descriptive	Direct	10 (1.0)	30 (2.9)	133 (12.9)
	Indirect	188 (18.2)	125 (12.1)	77 (7.4)
Entertainment	Direct	1 (0.1)	5 (0.5)	80 (7.7)
	Indirect	2 (0.2)	12 (1.2)	27 (2.6)
Evaluative-stereotyped	Direct	1 (0.1)	4 (0.4)	11 (1.1)
	Indirect	6 (0.58)	26 (2.5)	64 (6.2)
Alarmist	Direct	14 (1.4)	12 (1.2)	2 (0.2)
	Indirect	168 (16.2)	28 (2.7)	7 (0.7)

In parentheses, the percentages on the total of 1034 headlines.

were either descriptive or alarmist. However, differences were perceived between the two, namely, greater alarmism was found in news on citizen security (57.8% of headlines) than in those on health security (44.1%). Descriptive headlines reached 48.6% in health security and 39.2% in the case of citizen security. The evaluative-stereotyped headlines’ expressive intentionality was observed in those about the Olympic Games (12.4%) and hardly appeared in those on tourism security (1.8%).

**Discussion**

The media coverage leading up to the Rio de Janeiro Olympics continued to portray Brazil based on main stereotypes, depicting it as a land of contrasts (Bignami, 2002). Additionally, the outbreak of the Zika virus was highlighted due to its timing.

Gartner and Shen (1992) suggested that media messages can bring about a change in a country’s image within a short time, but this change may not last long without consistent reinforcement. Although few studies have been conducted on the perception of risk and security after the Olympic Games, those available

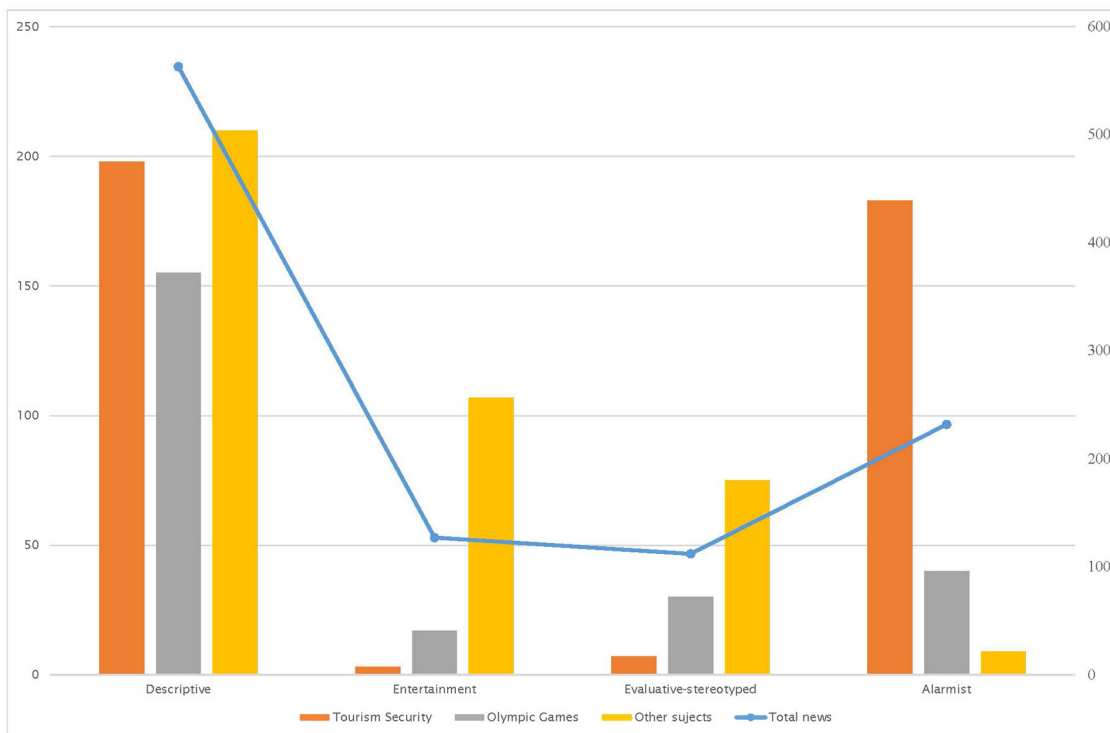


Fig. 3 Distribution of press headlines on Rio 2016 Olympic Games by subject and type of expression.

Table 2 Stories by month.

Newspaper	Date	Headline
El Mundo	December 8, 2015	Brazil investigates 1,761 suspected cases of microcephaly and 19 deaths
La Vanguardia	January 17, 2016	Health Minister considers “cautious” the US recommendation to not travels to Brazil
El País	January 28, 2016	Alarm in Brazil: cases of babies with microcephaly jump from 300 to almost 3900 in 3 months
La Vanguardia	February 2, 2016	Brazil rules out Zika risk for most tourists in Olympic Games
ABC	February 13, 2016	Brazilian Army and Scientists increasingly prepared to fight Zika
Cinco Días	May 31, 2016	Zika threatens the Rio Games and 25,000 million euros

Examples of the evolution of Zika virus headlines.

indicate that security remained a significant concern. However, the focus is more on crime than health security. For instance, Rocha and Fink (2017) studied attitudes toward attending the 2016 Rio Olympic Games and visiting Brazil after the event. They found that “personal safety” had the lowest rating on a Likert scale ranging from one to seven when considering the Olympic Games ( $M = 4.82$ ;  $SD = 1.46$ ), and significantly affected Brazil’s hospitality rating ( $M = 3.35$ ;  $SD = 1.44$ ). In a survey of 384 tourists in Rio de Janeiro, conducted in October–November 2017, Tomé (2018) found that “violence and crime” was the primary factor restricting the arrival of tourists to Rio (4.2 out of 5), followed by “public health” (3.6), and “natural disasters” (2.1).

Despite the initial level of alarm surrounding the Zika virus outbreak prior to the Olympic Games, the economic impact was less than predicted, with an estimated short-term cost for Latin America and the Caribbean of \$3.5 billion, equivalent to 0.06% of the region’s GDP (World Bank, 2016a). The World Bank (2016b) allocated \$150 million to fight the Zika virus in this region. After the Olympics, on August 24, 2016, the newspaper *La Vanguardia* published a news item with the headline “Not a trace of Zika at Rio’s Olympic Games”. One year after the event, the Zika virus epidemic in Brazil was considered over and no longer a public health emergency of international concern (WHO, 2016c). As a result, the initial alarm surrounding the virus decreased, and

other diseases, such as dengue and H1N1 flu, gained more attention in health briefs and research agendas (Secretaria de Vigilância em Saúde, 2017; Ximenes et al., 2016).

The affective and cognitive components of the information changed during the 16 months of data collection, which may have affected the destination’s image. Initially, headline expressions were mostly descriptive, but as the Olympic Games approached, they became increasingly alarmist. Table 2 provides a clearer indication of how journalistic approaches in stories evolved over time.

Gallarza et al. (2002) suggested that destination images are dynamic and subject to change. Within the present study, the analysed data suggest that the evolution of news on affective and cognitive components of information may have affected the image of the destination. However, further research is needed to determine the extent of this impact on tourist numbers. The number of tourists arriving in Rio from Spain showed variations that suggest the presence of external factors affecting usual tourist movements. Although the number of visitors recovered in August 2016 (4114 visitors), the month of the Games, the following year saw a significant decrease in the arrival of visitors (52%—1997 total visitors) (Ministerio do Turismo de Brasil, 2018), suggesting a negative impact on Brazil’s image as a tourist destination. To measure the extent of media coverage’s impact on the



destination's image and perception of risk, it would be necessary to measure its organic image (prior to media coverage) and its complex image (post-visit) on a sample of visitors.

## Conclusion

We analysed media coverage in the run-up to the Olympic Games in Rio de Janeiro, with the unexpected appearance of the Zika virus crisis. The media can shape the perceptual and cognitive aspects of tourists' image of a destination, not only through the news content but also through the way they are presented. The headlines' negative approach was strikingly more frequent in security-related issues, but it was especially significant in the headlines addressing citizen security. This does not happen when reporting exclusively on the Olympic Games, as those headlines' overall approach was positive (50.6% of the news) or neutral (29%), and half of the time when the tone became negative, it was because security issues were addressed.

The media coverage of the Olympic Games in Rio de Janeiro was generally descriptive, except for security-related issues, particularly citizen security, which tended to have more alarmist headlines. This perpetuated and reinforced the stereotype of Brazil as a violent and unsafe destination. Accordingly, the headlines used were more expressive when addressing citizen security, whereas they were more informative in other news. Health security issues were often presented using citation-type headlines and with greater objectivity. In these cases, the media simply disseminated notices from health institutions.

The present study brings a practical-contextual contribution. By analysing the media coverage of Rio de Janeiro and the Zika virus in Spain before the Olympic Games, it offers insights for destinations on how to deal with such events. Despite the alarmist headlines and overestimated infection probabilities, most news pieces had a positive tone. In such situations, DMOs must try to spread reliable information about the actual situation regarding the crisis, for instance, sending informative briefs to news outlets.

In the specific case of Brazil, the country has a history of having its image as a tourist destination harmed by events that were seen as opportunities to improve it, such as the 1950 and 2014 FIFA World Cups (Buarque, 2015; Schallhorn, 2019). Assessing the impact of the Olympic Games (or of the outbreak of the Zika Virus in the period preceding it) on the destination image of Rio or Brazil is beyond the scope of the present study, which merely analysed the media coverage regarding the event and the health crisis. However, the results of Tasci et al. (2019) suggest that there were no significant differences over time.

A possible reason for this is the fact that the Olympic Games were associated only with Rio de Janeiro (as opposed to the whole country), which makes it easier to address infrastructure and social issues that could cause more negative repercussions. Evidence in favour of this possibility is provided by Ferreira et al. (2022), who found that, as an exception to the norm, the destination brand of Brazil did not affect Rio's image during the Games. Naturally, the reasons for these missed opportunities (or negative results, in the cases of the World Cups)—social problems, inequalities, insecurity, etc.—are far beyond the control of tourism boards.

Considering the results discussed and previous contributions, the present paper reinforces the managerial implication that cities and countries need to prioritise making improvements for their citizens to become more appealing to tourists. This can be achieved by integrating tourism within the country's general development policy, as suggested by Ritchie and Crouch (2003). By doing so, tourism can be viewed and utilised as a tool for local development, while also addressing social issues such as public relations and destination image issues. It is only through actively working to tackle structural problems that a country can hope to

receive positive media coverage during mega-events. Simply relying on public relations efforts will not suffice if the underlying problems are not addressed.

The present study has some limitations that need to be acknowledged. First, the study is limited in scope, as it only analysed media coverage of Rio de Janeiro and the Zika virus in Spain prior to the Olympic Games. Therefore, the generalisation of results to other events or countries should be done with caution. Secondly, although content analysis is an appropriate method for this investigation, there is an inherent subjectivity in the analysis and evaluation of news articles, particularly in the identification of the types of expressions used. Future research should aim to address these issues by using multiple methods of analysis and expanding the scope of the study to include multiple countries and events.

## Data availability

The datasets analysed during the current study are available in the Dataverse repository: <https://doi.org/10.7910/DVN/S0JRSU>.

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## Competing interests

The authors declare no competing interests.

## Ethical approval

We confirm that our study, which involves an analysis of newspaper headlines, has strictly adhered to ethical guidelines, and has ensured that all sources have been properly cited. Our research has not involved any human or animal subjects, and we have taken all necessary precautions to maintain the confidentiality of the data used in the study. We are confident that our study complies with the ethical standards set forth by the relevant scientific community.

## Informed consent

Our study involved an analysis of newspaper headlines, which were publicly available and did not require the participation of human subjects. As such, we did not need informed consent from any individuals or groups. We ensured that all data were properly anonymized and that no personal identifying information was used in our analysis. Therefore, we believe that an informed consent statement was not necessary for our study.

## Additional information

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