Research Article

The Buzz of Brisbane 2032: Themes of Online and Social Media Olympic Sentiment

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Abstract
Brisbane will stage a more regionally focused Olympics and Paralympics in 2032 when it follows in the footsteps of a series of mega-city hosts. In this new environment, in which there are challenges finding nations willing even to bid for the event, it is important to understand how sentiment is expressed towards this Games edition, which is being promoted as delivering a sustainable legacy while experiencing different demands, levels of buzz, and risks than previous hosts. This study examines audience emotions towards Brisbane 2032 across 60,929 messages and posts from Facebook, Twitter, Reddit and online media articles between 2021 and 2023. The results highlight positive sentiment overall and outline key themes that the community perceive to be important. However, the findings also indicate early concerns and levels of anxiety towards elements of the Games. The multi-layered analytical approach of this study ensures it progresses beyond general judgements on positive and negative sentiment, providing a more nuanced understanding of emotions towards Brisbane 2032.

Keywords
Olympics, Paralympics, Brisbane 2032, sentiment, buzz

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Introduction

The International Olympic Committee (IOC) has developed a host city problem over the past decade. Historically, some of the world's leading destinations clamored to be associated with the Olympics and Paralympics, but this number has dwindled and in 2017 the IOC made the unique decision of awarding both the 2024 and 2028 Games at the same time, to Paris and Los Angeles respectively. Escalating costs and political shifts, which occurred amid public criticism and votes or referenda, were key reasons for three other cities – Rome, Hamburg and Budapest – withdrawing their bids, with similar issues affecting the winter Games (see, e.g., Evans, 2018; Pells, 2017). Public sentiment towards the Olympics is therefore an important topic, particularly with a significant new direction emerging with Brisbane's selection for 2032. Brisbane will be the smallest Olympic venue in eight decades and faces different challenges to Games held in mega-cities. It is therefore vital to understand how sentiment is expressed ahead of an event that the IOC and the Brisbane organizing committee is promoting as creating a sustainable Games legacy across the host city and the broader south-east Queensland region (see Olympics.com, 2021, 2023).

The aim of this study is to examine Brisbane 2032 sentiment across social media and online platforms. Elements related to the "buzz" (Delia & Armstrong, 2015; Mohr, 2007) surrounding anticipation of the Games are highlighted, as well as factors related to theoretical aspects of legacy mega-event research. Using social listening software to understand audience perspectives from a range of media platforms, the sample includes 60,929 messages and posts related to the Games across Facebook, Twitter (since re-named X), Reddit and online media articles between 2021 and 2023. The social and online media messages and stories being examined reflect sentiment, perceptions or predictions of how positive or negative the Games might be. The results highlight positive sentiment overall and outline key themes that the community consider important, including athletes, legacy and economy, however there are early concerns over levels of anxiety towards the event. This exploratory study, which utilizes a multi-layered analytical approach, applies a unique perspective through providing real-time and longitudinal data on the buzz of the legacy of the 2032 Olympics and Paralympics, including through its focus on a more sustainable and regional approach. In doing this, the project moves beyond the generality of positive or negative sentiment towards a more precise understanding of discrete emotions.

Brisbane 2032 Background

Understanding sentiment for Brisbane 2032 is particularly important considering the shift in the IOC's focus when announcing the Queensland state capital as the Games host. Brisbane will be the first Olympics and Paralympics staged outside a mega-city or nation's capital in the past two decades. The Brisbane 2032 Games were announced during the COVID-impacted Tokyo 2021 Olympics and signaled a switch to a more regional location following venues that since 2008 have included Beijing, London, Rio,

and Tokyo, and will involve Paris in 2024 and Los Angeles in 2028. While the event is known as Brisbane 2032, the neighboring areas of the Gold Coast and Sunshine Coast were also part of the bid, highlighting the regional focus as part of the IOC's push towards greater sustainability, economic responsibility and successful legacies for host cities as part of the Olympic Agenda 2020 (Olympics.com, 2021, 2023). This includes high usage of existing venues, partnerships with regions, and aligning with the area's plans for long-term business and infrastructure development (Lutton, 2021; Olympics.com, 2021). However, while the initial Brisbane budget was A$5bn (US$3.2bn), it had already increased to A$7bn by 2023 (US$4.5bn) and was undergoing a cost review of all venues – including the main stadium rebuilding plans at the Brisbane Cricket Ground – in early 2024.

Legacy elements are crucial to ensure the success – and ultimate price – of hosting the Games, especially in a smaller region, with Olympic hosts required to cover costs (Flyvbjerg et al., 2020). Staging the Olympics and Paralympics is financially risky and has a history of over-runs, which have contributed to an environment in which there is a growing reluctance to nominate as Olympic hosts (Baade & Matheson, 2016; Evans, 2018; Flyvbjerg et al., 2020; Pells, 2017; Scheu & Preuss, 2017). While there was interest from India, Indonesia, Qatar, Spain and Germany, Brisbane was given the Games without the traditional, extended bidding process. Instead, the IOC nominated Brisbane as the preferred candidate, and then confirmed rather than awarded the bid.

Studies on the Brisbane 2032 Games have already emerged, with Tham (2023) noting how the Olympic legacy has been transformed to expand its sporting impacts in favor of a more regional approach, which aims to foster wider socio-economic effects to benefit communities outside of major cities. Climate action and environmental sustainability were also explored by Heynen and Ambeth (2023) and Ross and Orr (2022), emphasizing the alignment with the Olympic intent to be a carbon-friendly event. In this environment, sentiment research is valuable and has been undertaken to gauge reactions to previous Olympics in mega-cities. Kassens-Noor et al. (2019) examined hosts and bid sites between 1988 and 2024, finding these cities received greater positive brand publicity through positive tweets compared with negative ones. However, the Tokyo 2021 Games were viewed more negatively, including due to being staged during the pandemic, and the Twitter hashtag #CancelTheTokyoOlympics was prevalent (Lewis, 2023). It is within this Olympic and Paralympic context that this study examining sentiment of Brisbane 2032 is located.

Legacy and the Olympics

At both a theoretical and practical level, Olympic legacies involve the focus on developing long-term benefits for a city and region that derive from hosting the Games (IOC 2017, 2021). As Preuss (2007, p. 211) states, legacy is "all planned and unplanned, positive and negative, tangible and intangible structures created for and by a sport event that remain longer than the event itself". This can involve new stadia, transport development, economic shifts around business and tourism, or areas of public

space. Girginov and Preuss (2022) have noted how legacy is valuable to the Olympic movement through its relationship with social life and changes to structures in society, while legacy targets can also look to improve quality of life (see Preuss, 2015).

Whether Olympics have positive or negative legacies for the host city has often been contentious (see Brown, 2020; Preuss, 2007; Scheu & Preuss, 2017), particularly with recent Games that have finished over budget including Tokyo 2021 and Rio 2016 (see Flyvbjerg et al., 2020; Seccombe, 2021). The Games are the world's most expensive mega-event and there is considerable risk for host cities (Flyvbjerg et al., 2020). The cost of Tokyo's Games was more than double the original estimate, at US$13 billion, and there has been significant controversy in Japan over the awarding of the bid and subsequent concerns over costs, corruption and governance (see Seccombe, 2021; Takahashi & Fudauchi, 2022; Wade & Kageyama, 2023). Providing more sustainable and economically responsible Games has been a recent public focus of the IOC's sustainability goals (IOC, 2021; Olympics.com, 2021). At a smaller global level, cost and a rising budget were reasons for the Australian state of Victoria cancelling its hosting of the 2026 Commonwealth Games, and subsequent difficulties in securing a host. Olympics tend to go over budget due to three areas – general infrastructure, sports infrastructure, and operational costs (Baade & Matheson, 2016). However, these risks are taken on in the hope that the main benefits of staging the Games will be realized. These include, as Baade and Matheson (2016, p. 202) argue, the economic element of tourist spending when the Olympics are occurring, benefits to infrastructure and trade, and the more social and intangible element of the "feel-good effect".

Key areas that Brisbane 2032 is focusing on in its legacy planning, with a lifespan of up to 10 years after the Games' conclusion, are economic, social and environmental elements. Scheu and Preuss (2017) noted six legacy categories in a systematic review of Olympic hosts between 1896 and 2016, which included urban development; environmental enhancement; policy and governance; skills, knowledge, and networks; intellectual property; and beliefs and behavior (see also Scheu, Preuss & Konecke, 2021). The IOC (2017) developed categories considered important for host cities in the long-term such as, for example: organized sports development; urban development; environment enhancement; and economic value and brand equity. These categories, and other previous scholarship incorporating theoretical elements of legacy, are valuable in providing areas for analysis in pre-Olympic sentiment in this study of online and social media perceptions toward Brisbane 2032.

Sentiment and the Olympics

Sentiment research framed through the lens of the Olympics is vital because it highlights perceptions of individuals and their attitudes towards the Games (see Dawson et al., 2014; Jia et al., 2022; Kassens-Noor et al., 2019; Lewis, 2023; Li et al., 2024; Mello et al., 2023). Scholarship into sentiment examines whether messages are positive, negative or neutral and, as Boatwright (2023, p. 9) states, provides "insight into the emotional temperature of conversations users generate around particular

subjects". In Olympic research, Oh et al. (2021) examined sentiment towards the unified Korean women's ice hockey team at the 2018 winter Olympics, finding discussion on Twitter was positive at first but increasingly negative when politicians questioned the inclusion of North Korean skaters in the squad. Li et al. (2024) examined public sentiment towards naturalized Chinese athletes at the 2022 winter Games and concluded users of Weibo had mostly positive perceptions of the Olympians.

Outside of mega-events, sentiment research offers a glimpse into longitudinal and cross-sectional insights towards a particular phenomenon and can be a tool to modify or tweak regulations and policies that matter to the communities of interest (Gunter et al., 2014; Mehraliyev et al., 2022). Sentiment also relates to buzz in a marketing and sponsorship context, with events creating hype through broadcasts, social media content and word of mouth (Delia & Armstrong, 2015; Mohr, 2007). In sponsorship terms, the halo effect is also relevant, with it translating either to positive or negative sentiment to a sponsor's brand because of their association with a particular property (see Leuthesser, Kohil & Harich, 1995). This is particularly relevant for 2032, given cities like Brisbane can be thought of and evaluated as brands (Merrilees, Miller, & Herington, 2009). Understanding positive and negative sentiment, as well as examining the presence – or absence – of buzz, is essential in gaining insight into audience perceptions and potential implications for the city's brand.

In the case of the Brisbane 2032 Olympics, sentiment analysis can be framed in terms of whether the investment of money, resources, and time is perceived as being well-directed, given that past evidence indicates very few Games make any profit (see Flyvbjerg et al., 2020; Seccombe, 2021; Takahashi & Fudauchi, 2022). More importantly, sentiment is balanced against an opportunity cost where money invested is viewed as being at the expense of other public infrastructure, such as schools, hospitals, highways, housing, and transport. The Olympics, in comparison, are not considered a necessity. In the case of Brisbane, key non-sport priorities of federal, state and local governments have recently included spiraling costs of living, a housing crisis, and climate change (see, e.g., McKay, 2023; Shi & Phillips, 2023). The 2032 Games was awarded to Brisbane during the pandemic, and before the Russia-Ukraine conflict started. The escalation of tensions and rising costs associated with hosting the Games have provided greater economic complications, and potential negative sentiments towards this mega-event – especially when the lead-up time is longer than the previously standard seven years.

In terms of community sentiment, Weaver et al. (2023, 2024) suggested there was some evidence of early support from residents towards the Brisbane Games, although their surveys found stronger support outside of a core nucleus of residents living in Brisbane. These findings reflect sentiment analysis of Olympic editions elsewhere (see, e.g., Waitt, 2001), but these studies did not examine digital or social media content. The current study seeks to explore further insights on the under-researched aspect of digital and social media sentiment analysis for the 2032 Olympics, providing both real-time and longitudinal findings on the thoughts, feelings and attitudes of various stakeholders through online and social media. There is limited literature or projects that focus on

these aspects, excluding those of an economic nature such as return on investment predictions. As a result, this study provides theoretical and practical contributions to assist future hosts to factor in sentiment analysis in their planning and development of the Olympics.

Method

Based on the aims of the project, the study employs the following research questions:

> RQ1: What themes are mentioned with positive or negative sentiment in anticipation of an Olympics and its legacy for the host city?

> RQ2: What discrete emotions are present in the sentiment towards Brisbane 2032, and do they vary across timeframes and social and online media platforms?

The current study utilizes computational social science methods, which are relatively new in sports communication. In applying this design, the research aims to respond to Boatwright's (2023) call for research to consider such approaches and identify their importance in providing more than a one-off snapshot, and relying on naturally occurring data rather than self-reported material. Sentiment analysis is, therefore, a relatively recent addition to scholarship in sports communication (Boatwright, 2023). Sentiment analysis is particularly appropriate given the current study's aims and research questions, as it classifies the polarity of text through positive, negative or neutral categories, and can include large amounts of text (see Boatwright, 2023; Li et al., 2024; Oh et al., 2021). This study builds on recent sentiment analysis in Olympic-related sports communication studies (see, e.g., Li et al., 2024; Oh et al., 2021) by applying more statistical layers of analysis to the sentiment analysis, as opposed to techniques which have predominantly been thematic or descriptive. This can overcome weaknesses of using machine-generated analysis at the initial stage (see Boatwright, 2023; Li et al., 2024). In this study, third-party provider Sprout Social was utilized to collect the data, and for the first phase of analysis examining sentiment across media and subject themes. Sprout Social's (2023) sentiment analysis is described generally as employing algorithms to judge whether messages are positive, negative, or neutral. In the second phase, Linguistic Inquiry and Word Count (LIWC) software was applied to examine discrete emotions linked with sentiment. Messages were downloaded and analyzed through the statistics program SPSS (version 23.0).

Boatwright (2023, p. 14) has called for greater explanation into how the "right data" has been obtained through computational methods. As a result, the following guidelines were implemented. The global data collection across Twitter, online articles, Reddit and Facebook was developed by applying the search terms "Olympics", "Paralympics", "#Olympics", "#Paralympics", "Brisbane", "2032", "Sunshine Coast", and "Gold Coast". Online articles included stories from traditional news sites across regional, metropolitan, national and international publications in Australia and throughout the

world, as well as content from other websites and blog posts. Data were collected between July 1, 2021 and July 31, 2023, starting with the month the Olympics and Paralympics were awarded to Brisbane, and the end of the nine-year countdown to the Games. This sample allowed for an overview of sentiment across the entire time frame, as well as for comparisons each July, when major announcements, such as the Games being awarded to Brisbane in Tokyo and annual countdowns, resulted in peaks of coverage. Data were cleaned and items removed if they did not relate directly to the Olympics or Paralympics. For example, searches based on "Brisbane" could result in content that was not sports or Olympics specific. Other articles and posts could mention the Games as part of the text of the page, but not in the actual content of the story or the post. Only content in English was collected. While identifying the location of the social media messages was not always possible, including due to the software's Application Programming Interface (API) restrictions with specific social media platforms, Twitter messages and online articles came from both domestic and international markets.

Overall, 60,929 messages, posts and articles were included for analysis across Twitter (36,515), online articles (20,853), Reddit (2995), and Facebook (566). Data were collected in the following categories: date and time, content of message, media type, type of sentiment, user ID, and theme. In this project, topic-based analysis was employed to generate themes, employing key words to identity words and place them into groups (see Sprout Social, 2023). Based on the literature and previous theoretical elements focused on legacy at mega-events (see Baade & Matheson, 2016; Flyvbjerg et al., 2020; IOC, 2017; Scheu & Preuss, 2017; Scheu, Preuss & Konecke, 2021), media coverage and preliminary sentiment analysis, the following themes were developed and examined: athletes; economy; environment; legacy; and transport. Messages were placed into these categories based on key search terms in the Sprout Social system. For example, the economy theme included search terms such as economy, business, infrastructure, connectivity, innovation, budget and costs.

After the initial analysis of data, LIWC was utilized to provide greater insight into the emotions of the messages. LIWC analysis calculates averages by quantifying the occurrence of words related to a construct of interest within its pre-existing dictionary, and then computes the ratio of these words to the total number of words in the text. This process provides a numerical representation of the overall positive or negative emotional tone, allowing for a quantitative analysis of the text's emotional content. Using such an approach to probe further insights into the sentiment within the data is supported in the literature, particularly when attempting to quantify the representation of a construct or to identify patterns (Humphreys & Wang, 2018). Due to these benefits, researchers have been able to utilize LIWC to analyze large amounts of social media data and gain deeper, quantifiable insights which align with the aims of the present study (Mulcahy et al., 2024; Pham et al., 2023). Automated text analysis using a dictionary-based approach offers significant advantages in research aimed at quantifying the representation of constructs and ensuring study replicability (Humphreys & Wang, 2018), as aligned with the aims of the current study. By adhering to established criteria, dictionary-based analysis provides a more objective and consistent assessment,

thereby minimizing biases that human researchers may introduce (Humphreys & Wang, 2018). This enhances the rigor and reliability of the study.

It is important to note there were limitations with the Sprout Social software due to its API with social media, which meant there were restrictions over what could be collected from the platforms, including locations of the messages. For example, Sprout Social would only allow 10,000 Twitter downloads each day of separate posts, retweets and likes. The highest number of engagements on Twitter was more than 150,000 on July 21, 2021, when the Games were awarded to Brisbane. As a result of the limitations, not all messages mentioning the search terms could be downloaded, especially in the immediate aftermath of the 2032 announcement. Further, Facebook public pages needed to be included to allow data to be collected. A sample of 28 high-profile public pages from local government, media, business, and sports pages were included. As outlined above, the number of Facebook messages were not as comprehensive as the Twitter and online article categories. News articles and stories could involve reports that were syndicated across multiple media titles. Other limitations are the third-party provider, Sprout Social (2023), delivering the data through its data mining and algorithms, which can have weaknesses in general sentiment analysis (see also Boatwright, 2023). Words, including love, hate or best, are rated due to positive or negative mentions, but messages including words or phrases with double meanings, or unclear content, emojis or sarcasm can be difficult for the software to rate (Sprout Social, 2023). However, the multi-layered approach, employing both sentiment and LIWC analysis to examine the data, ensures reliable and rigorous results relating to sentiment and themes in the coverage.

Results

The preliminary phase of results reflects high levels of positive sentiment across the entire timeframe, but there were notable differences when the three July periods were examined. Of the 57,013 overall messages with sentiment evident, 53.0% reflected positive sentiment (see Table 1). There were slightly more neutral comments overall than negative ones. In July 2021, sentiment was 51.6% positive across

Table 1. Positive or Negative Sentiment by Type of Media.

Sentiment	Facebook	Reddit	X (Twitter)	Online articles	Total
Negative	109	707	8038	3961	12,815
%	0.2	1.2	14.1	6.9	22.5
Positive	321	1344	12,863	15,688	30,216
%	0.6	2.4	22.6	27.5	53.0
Neutral	109	696	12,796	381	13,982
%	0.2	1.2	22.4	0.7	24.5
Total	430	2051	20,901	19,649	57,013

18,380 messages, with negative sentiment (25.2%) slightly higher than the neutral texts (23.2%). Positive messages increased to 64.8% in July 2022, with negative sentiment the lowest measure at 15.8% across a total of 1257 messages. In the 3335 messages in July 2023, positive sentiment dropped to 44.5%, just ahead of negative responses at 42.5%. Overall, online articles (27.5%) were the most likely to have positive sentiment across the entire sample, followed by Twitter messages (22.6%). Twitter had the highest proportion of negative messages, but also the most considered neutral.

As noted above, the themes of athletes, economy, environment, legacy, and transport were developed and examined (see Table 2). There were 52,969 posts in the sample where these themes were evident across the overall timeframe. The most popular theme in messages was athletes (33.8%), ahead of legacy (26.1%), economy (22.1%), transport (14.2%) and environment (3.8%).

In messages that included themes, there were 37,386 that reflected positive, negative or neutral sentiment (see Table 3). Environment (88.8%) had the largest proportion of positive sentiment, while the other four categories exhibited between 70.6% (legacy) and 75.7% (transport). Economy had the largest amount of negative sentiment (24.0%), while athletes (16.9%) and environment (10.1%) displayed the lowest figures in this category. Messages about athletes contained the highest levels of neutral sentiment.

Positive sentiment

A more in-depth analysis provides greater clarity and nuance in understanding positive and negative sentiment. Utilizing LIWC, average positive emotional sentiment was coded where words such as "happy", "joy", "love", "excited" and "hopeful" were present. After analyzing for positive emotional sentiment, LIWC calculated the

Table 2. Themes Evident in Messages. (Multiple Themes Were Possible in Each Message).

	Athletes	Economy	Environment	Legacy	Transport	Total stories with themes evident
Overall	17,903	11,695	2030	13,812	7529	52,969
% Of stories	33.8	22.1	3.8	26.1	14.2	100
Jul 2021	4680	2170	194	2552	1288	10,884
% Of stories	43.0	19.9	1.8	23.4	11.8	100
Jul 2022	425	339	65	364	262	1455
% Of stories	29.2	23.3	4.5	25.0	18.0	100
Jul 2023	950	1481	103	735	452	3721
% Of stories	25.5	39.8	2.8	19.8	12.1	100

Table 3. Sentiment by Theme Type.

	Transport		Athletes		Environment		Legacy		Economy		Total	
		75.7 (, %)		72.5 (, %)		88.8 (, %)		70.6 (, %)		71.7 (, %)		72.3 (, %)
Positive	5488		12,514		1789		9485		8110		37,386	
Negative	1382	19.1	2915	16.9	203	10.1	3016	22.5	2708	24.0	10,224	19.8
Neutral	381	5.0	1841	10.7	23	1.1	928	6.9	488	4.3	3661	7.1
Total	7251		17,270		2015		13,429		11,306		51,721	

percentage of words which applied to the positive emotional sentiment category for each post. As an example of a high level positive emotional response one Twitter user posted: "Congratulations Brisbane! Congratulations #Brisbane2032 #Olympics" (positive emotional sentiment score of 33.33).

To probe deeper insights as to whether the level of positive emotional sentiment changed over the three years of observation (see Figure 1), a one-way ANOVA was undertaken comparing the positive emotional sentiment across July 2021, July 2022 and July 2023. The ANOVA was significant (df = 2, F = 47.92, $p < .001$, $\eta_p^2 = .001$). When examining differences across the time periods, it was observed that the positive sentiment had non-significant differences across 2021 (M = .62, SD = 1.67) to 2022 (M = .65, SD = 1.40) ($p = .538$). The level of positive sentiment in 2023 (M = .350, SD = 1.04), however, was shown to be significantly lower than 2021 and 2022 ($p < .001$).

A two-way ANOVA was undertaken to probe how positive sentiment changed over time on different online media platforms. The interaction between timeframe and online media was significant (df = 6, F = 4.45, $p < .001$, $\eta_p^2 = .001$). The results demonstrated that positive sentiment on Facebook in 2021 (M = 1.10, SD = 2.31) was significantly higher than 2022 (M = .40, SD = 1.08, $p = .033$), but non-significantly different in comparison with 2023 (M = .59, SD = 1.21, $p = .110$). When considering Twitter, it was evident that positive sentiment was significantly lower in 2023 (M = .28, SD = 1.10) in comparison to 2021 (M = .66, SD = 1.87) and 2022 (M = .72, SD = 1.78) ($p < .001$). All other social and online media had non-significant differences when comparing positive sentiment across 2021–2023.
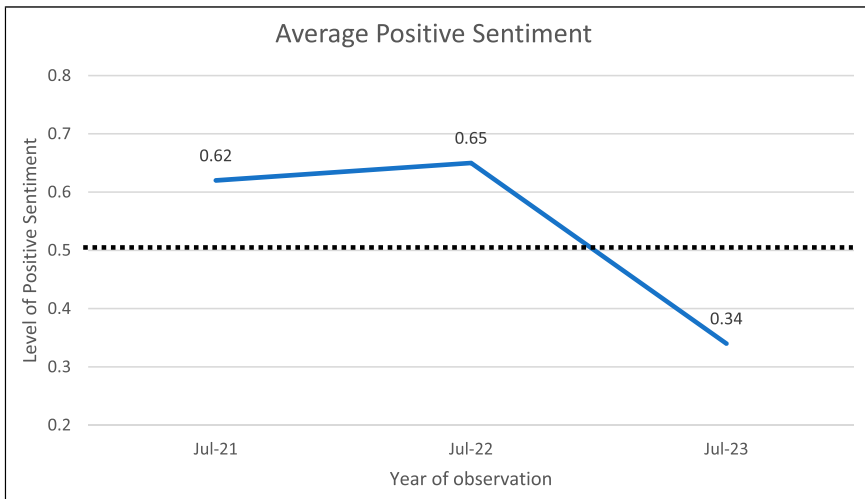

Figure 1. Positive sentiment by July 2021-23 (dotted line indicates the average across the overall time-frame).

Negative Sentiment

Average negative emotional sentiment was coded by LIWC when words such as "sad", "angry", "fear", "anxious" and "depressed" appeared within the data (see Figure 2). An example of a high-level negative emotional response was this post about how disputes between the Queensland Government and Opposition could involve "threatening the security of the 2032 Olympics. This will get very nasty" (negative emotion score of 2.13). A one-sample t test was first undertaken to observe if the negative emotional sentiment and positive emotional sentiment levels within the data significantly differed. A paired t test was used providing evidence of levels of positive sentiment being significantly higher (M = .55, SD = 1.46) than negative sentiment (M = .20, SD = .76) (t = 61.28, df = 85,883, p < .001).

When solely examining negative emotional sentiment, a one-way ANOVA (df = 2, F = 34.93, p < .001, η_p^2 = .003) found that it was significantly higher in 2021 (M = .29, SD = .96) in comparison with 2022 (M = .14, SD = .55) and 2023 (M = .18, SD = .65) (p < .001). There was also a non-significant difference in negative emotional sentiment between 2022 and 2021 (p = .129). Negative sentiment peaked in July 2021 but dropped in July 2022, and there was a slight increase in July 2023.

Anxiety and Anger

Anxiety and anger are key contributors to negative sentiment, with both emotions being important considerations in previous research into sports spectators (see Biscia et al., 2012;
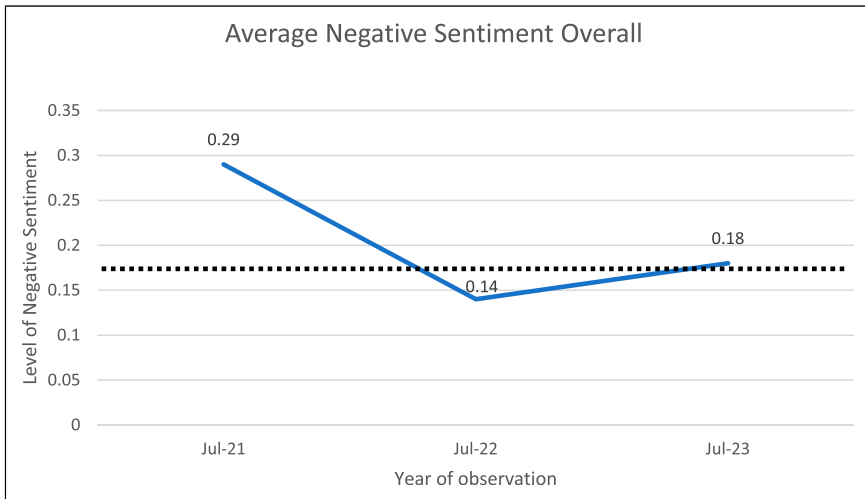
Figure 2. Negative sentiment by July 2021-23 (dotted line indicates the average across the overall time-frame).

Foroughi et al., 2016). Further, anger is a key determinant of word-of-mouth in sports research (Sato et al., 2018), while anxiety is known to predict avoidance behaviors, which could be important considering issues of attendance and the viability of the Olympics. Both emotions were evident in the analysis, which provides a valuable understanding of these discrete emotions. A one-way ANOVA (df = 2, F = 2.26, p = .104, η_p^2 = .000) was undertaken to consider anxiety across the different time points. The results demonstrate that there were non-significant differences between anxiety in the sentiment from 2021 (M = .02, SD = .27) and 2022 (M = .02, SD = .29). It was evident that anxiety was significantly higher in 2023 (M = .037, SD = .24) than 2021 (p = .034) but non-significantly higher than 2022 (p = .234). When considering anger in the sentiment (df = 2, F = 17.12, p < .001, η_p^2 = .001), this emotion was significantly higher in 2021 (M = .08, SD = .47) when compared with 2022 (M = .02, SD = .26) and 2023 (M = .04, SD = .29) (p < .001). The difference between 2022 and 2023 was non-significant (p = .304).

Focus on the Present and Future

The posts and articles were also examined for the temporal focus of sentiment, looking for signs of what people were saying about the present situation, or the future in relation to Brisbane 2032. To analyze for this within the text data, LIWC identifies words and phrases that indicate a focus on the present or the future. For instance, words like "now", "today", and "currently" may suggest a present focus, while words like "to-morrow", "future", and "soon" can indicate a future focus. The program calculates a ratio of how much these appear on average in the total number of words. When considering how sentiment focused on the present (df = 2, F = 90.00, p < .001, η_p^2 = .007), it was evident this was significantly higher in 2023 (M = 4.19, SD = 2.88) than in 2022 (M = 3.38, SD = 2.74) and 2021 (M = 3.39, SD = 3.40). Non-significant differences were observed between 2022 and 2021 (p = .941). Sentiment focusing on the future was significantly higher in 2022 (M = 1.70, SD = .2.24) in comparison with 2023 (M = 1.49, SD = 2.34) (p = .012), but non-significant when compared with 2021 (M = 1.64, SD = 2.54) (p = .41). Comparatively, 2023 had a significantly lower focus on the future sentiment than both 2022 and 2021 (p < .05).

Discussion

The findings outline how sentiment has been expressed across social and online media towards Brisbane 2032, with a greater proportion of positive sentiment overall. In response to RQ1, the themes (see Tables 2 and 3) demonstrate some key areas where the messages from 2021 to 2023 have been focused. Unsurprisingly, despite many media articles on non-sporting issues, the focus on athletes was the most prevalent, given their prominent role and primary purpose in the Games. Athlete profiles were also extremely high during Tokyo 2021, which included the July collection period of that year. The legacy of the Olympics and Paralympics was also a key theme, overlapping with elements of the economy and transport, due to event infrastructure and planning in the

long-term. These findings link with previous research around legacy-focused projects, with Scheu and Preuss (2017) and the IOC (2017) both outlining the importance of urban development around Olympic editions (see also Scheu, Preuss & Konecke, 2021).

It was somewhat surprising to see the environmental messages at such a small proportion overall, especially considering some of the commentary linked with these types of issues in media. For example, there were vocal calls from representatives of The Greens political party for the redevelopment of the main stadium in Brisbane to be abandoned amid concerns over cost and urban renewal (Dennien, 2023; McKay, 2023). The Brisbane organizing committee has also outlined how it is focusing on elements related to economic, social and environmental factors, which align with the importance of environment enhancement as a legacy element (see IOC, 2017; Scheu & Preuss, 2017; Scheu, Preuss & Konecke, 2021). When each theme was examined specifically for sentiment, the environment category had the highest percentage of positive sentiment, which was again surprising considering some of the concerns about Olympic-related developments. However, there were also high-profile announcements during the awarding of the Games, promoting the event as being environmentally sustainable (Heynen & Ambeth, 2023; Olympics.com, 2021, 2023). There were relatively similar levels of positive sentiment in the other categories, potentially reflecting how elements related to economy, transport, and legacy can overlap. The economy theme had the highest negative sentiment measures, indicating concerns over costs of the infrastructure and Games legacy developments, as well as suggesting the negative impacts of ongoing cost-of-living issues. Questions over funding the Olympics, including plans for costly stadium rebuilds, are related to previous sentiment research which outlines how money could be redirected to areas including easing financial pain for residents, and greater financial support for health, education or climate-change mitigation (see McKay, 2023; Shi & Phillips, 2023). These concerns are built on the already well-understood foundation that hosting the Olympics is financially risky and likely to lead to cost over-runs (Baade & Matheson, 2016; Flyvbjerg et al., 2020; Scheu & Preuss, 2017). While highlighting the contested nature of mega-event legacies (Brown, 2020; Preuss, 2007; Scheu & Preuss, 2017), these findings suggest areas in which the organizers, including the Organizing Committee Board for the Brisbane 2032 Olympic and Paralympic Games and governments at federal, state and local levels, could prioritize to counter issues linked closely with the negative sentiment and that impact on communities (see Gunter et al., 2014; Mehraliyev et al., 2022), as well as enhancing the brand of the city and broader region (see Merrilees et al., 2009).

Sentiment Trends

Overall, sentiment towards Brisbane 2032 was significantly more positive than negative across the sample, which is consistent with the longer-term work of Kassens-Noor et al. (2019). In response to RQ2, which deals with discrete emotions in greater nuance through the LIWC analysis across the time frame in social and digital media, positive

sentiment peaked in July 2022 before suffering a significant decline in July 2023 (see Figure 1). The higher levels of positive sentiment apparent in 2021–2022 dropped significantly in 2023, providing evidence of "buzz" in relation to excitement and anticipation (Delia & Armstrong, 2015; Mohr, 2007) dropping over time. It is also an indication of the halo effect (see Leuthesser, Kohil & Harich, 1995) of the Brisbane Games announcement, which occurred on the eve of Tokyo 2021, with the events combining to drive buzz.

This peak is not a surprise, especially considering the support for the bid and excitement of the city being awarded the Olympics and Paralympics, and is reflective of the potential for highs and lows in sentiment across the lifecycle of the build-up towards 2032. The subsequent declines, including after the initial honeymoon buzz phase, suggest that the initial enthusiasm might have waned, or that external factors have influenced public perception negatively. This change may reflect evolving user de-mographics, platform policies, or specific events that influenced users' attitudes to-wards the Olympics. It can also indicate the shift from the messages focusing on the future, to the present, across the data sample, which might indicate a transition from anticipatory excitement to concerns about the actual execution of the event.

Trends in negative sentiment remained consistent across the social and online media platforms during the 2021 to 2023 time periods. Posts rated as negative included complaints about the financial cost of the Games, where money could be better spent by the Queensland Government, concerns about the main stadium forcing the removal of the East Brisbane State School, rising house prices, and cost of living issues. Again, these elements were similar to previous scholarship on the Brisbane Games (see McKay, 2023; Shi & Phillips, 2023). However, these issues still reflected less negative sentiment overall when compared with positive sentiment. That negative emotion peaked in July 2021 is likely influenced by early concerns or uncertainties about Brisbane when it was initially announced as the host. There was a subsequent drop in July 2022, possibly due to successful promotional efforts, such as the 10-year countdown to the Games or resolving initial issues or concerns. However, a slight increase in negativity was observed in July 2023, which warrants attention among the event organizers to address these emerging worries. Negative sentiment at this time related to costs associated with rebuilding the main stadium – an issue which remained in 2024 – the Commonwealth Games being cancelled in Victoria, comments from the Brisbane 2032 Organising Committee chief executive officer on nuclear power and making the Games carbon positive, and discussion over re-naming Brisbane to the indigenous-language Meanjin ahead of the Games. These elements, which highlight how concurrent news items can influence the perceptions of people and media towards the Olympics, could be grouped again in the IOC's (2017) legacy categories of urban development, environment enhancement, economic value and brand equity.

While there were encouraging results in terms of people perceiving the Olympics and Paralympics positively, drawbacks were already evident, and issues had emerged to generate substantial negative emotions. A crucial theoretical contribution of this work is moving beyond the generality of positive versus negative sentiment towards a more

precise understanding of discrete positive and negative emotions. In the analysis of the findings, there was a trend towards greater anxiety in the sample (Figures 3 and 4). Anxiety increased significantly from 2021 to 2023. There was an initial spike of anger in July 2021, however it fell in July 2022, before rising slightly in comparison with July 2023. In July 2022, items with negative connotations included the main stadium re-development and impact of the neighbouring school, concerns over the athletics being hosted at night during winter in 2032, or it being hard to get out and watch in the cold, and the Gold Coast mayor not being added to the Games' organizing committee board.

While anger and anxiety were both measured, anxiety requires particular attention as it is a key driver of negativity, demonstrating the value of considering discrete emotions as opposed to simply valence, whereby negative emotions are considered together as opposed to separately. Research in other fields indicates that adopting discrete-emotion approaches (Hosany, Martin, & Woodside, 2021; Kranzbühler et al., 2020), both theoretically and analytically, can offer important and nuanced insights. Similar value can be drawn for sports communication scholars as evidenced in the findings, particularly when examining the levels of anger and anxiety and their temporal fluctuations. This finding also provides a practical implication for the Brisbane organizing committee, and subsequent stakeholders, in that it is evident that future public communications should be designed in order to ease community concerns (see Gunter et al., 2014; Mehraliyev et al., 2022) towards specific issues such as those raised in the study, including economic factors, transport, infrastructure, and the general environment. Further, some negative sentiment is linked with politically charged issues, detracting from the focus on the Games. Early in 2024, the Queensland Government announced a review of spending on venues in an effort to reduce criticism of the plans
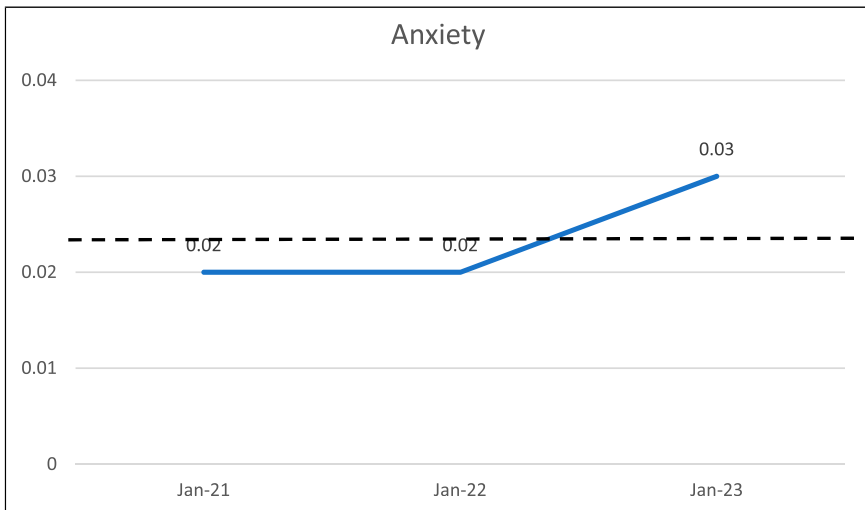

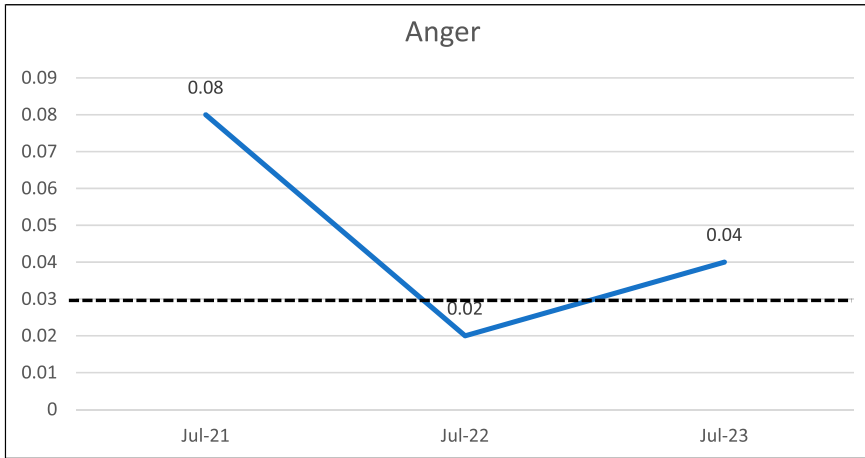**Figure 3.** Anxiety over time by July 2021-23.

Figure 4. Anger over time by July 2021-23.

and predicted cost of the main stadium. An election was also scheduled, so political concerns appeared to be a factor in this shift. While it is impossible to detach an event this large from politics – with federal and state governments responsible for funding – the event organizers need to provide clear messages that do not detract from the core aims in relation to Brisbane 2032. This can help the community to understand and engage with the issues, rather than being distracted by external political noise, and has the potential to reduce anger and anxiety while increasing positive emotions linked with the event.

Overall, it is essential for organizers and stakeholders to recognize and address shifts towards negativity, as indicated by the increase in anxiety observed in the data. This change underscores the importance of proactive management and mitigation strategies to maintain favorable sentiment towards the mega-sporting event. Elements that could be considered are how to communicate or manage community expectations regarding development questions and potential anxiety about the city's readiness for the Games. The implication of this finding also highlights issues such as potential anxiety as to where government spending is being targeted, when other areas involving cost of living relief or public health services could be considered more worthy of funding (see McKay, 2023; Shi & Phillips, 2023). Generally, the findings in this study highlight the importance of the organizers' communications teams providing a strategic long-term approach that focuses on generating smaller pockets of buzz more frequently as a more effective way to deal with the negative events that may lead to greater community anxiety.

Conclusion

The study's findings outline key insights into the perceptions of social and online media users towards the Brisbane 2032 Olympics and Paralympics. Examining sentiment

relating to the early stages of the event's development allowed the project to provide theoretical and practical contributions that can assist in the planning of mega-events. While containing elements related to aspects of legacy research, the findings also outline positive and negative responses that link with the buzz (Delia & Armstrong, 2015; Mohr, 2007) of the Games. The approach of this study allows this work to progress beyond general judgements on positive and negative sentiment, and provides a more nuanced understanding of discrete emotions towards mega-events such as Brisbane 2032. For example, a basic summary of the findings would indicate positive sentiment overall, however the multi-layered analysis indicates the emergence of anxiety among social and online media messages and posts during later stages of observation. Overall, there was significantly more positive sentiment than negative emotions in the messages, however it is evident that there were some concerns across the first two years of planning for the Games over the cost of infrastructure, potential economic pitfalls, and rising anxiety through social and online communities about staging the mega-event.

By employing computational social science methods, this study avoids a snapshot approach to research (see Boatwright, 2023). Instead, it provides both real-time and longitudinal analysis, highlighting actual perceptions rather than relying on anecdotal concerns through, for example, media reporting or cursory examinations of social media posts. The results provide organizers with the opportunity to alter approaches to policies, including communication strategies and planning, while there is still ample time before the starter's gun sounds, and can help shape the messages in key areas so they can apply more directly to their communities (see Gunter et al., 2014; Mehraliyev et al., 2022). This data is therefore valuable for a host city as it develops its Games legacy. Focusing more intensely on the long-term benefits, as well as dealing with sustainability and environmental issues in line with the IOC's aims, may be a way to assist the community to be less anxious until Brisbane 2032 begins.

As noted in the method, this study has limitations, including through the collecting of the social media and online articles through a third-party provider. The sample is therefore subjected to the company's content and algorithm guidelines, and limited by the social media platforms' API restrictions. Further research into the Brisbane 2032 Games is important throughout the planning phase of the event. It is therefore essential that sentiment scholarship continues during the lead-up to the Games as part of a longer-term longitudinal study tracking perceptions of this event with a more regional focus. A critical further phase is examining Brisbane 2032 sentiment when the Paris 2024; Los Angeles 2028 Games are held.

Declaration of Conflicting Interests

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