



Peak event: the rise, crisis and potential decline of the Olympic Games and the World Cup

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ABSTRACT

This paper tracks the growth of two of the largest tourist events: the Olympic Games and the Football World Cup, drawing on a dataset containing all events between 1964 and 2018. Overall, the size of the three events has grown about 60-fold over the past 50 years, thirteen times faster than world GDP. We identify an S-shaped growth curve and four different growth periods, with an emergent crisis phase in the late 2010s that may have brought us to 'peak event' – the point at which these events have reached their largest size. Outlining three different scenarios, we argue that the Olympics and the World Cup are at a critical bifurcation point, which also requires new bidding and hosting policies.

1. Introduction

Citius, altius, fortius. If there was one iron law that described the trajectory of mega-events such as the Olympic Games and the World Cup over the past-century, it was this. Faster, higher, stronger. The Olympic motto encapsulated the continuous growth of mega-events that has turned them into some of the largest projects on earth today. They are not just elite sport events, but tourist attractions and large-scale occasions for destination marketing, place transformation and urban (re) development (Getz, 2013; Getz & Page, 2019; Roche, 2000). Whether it was the number of spectators, the television audience, the revenue and costs, or the size of the sports and tourism infrastructure, the indicators knew just one direction: skywards. With their growth both benefiting from and contributing to the boom in mass tourism, mega-events have become emblems of the global spread of modernity (Roche, 2000).

Yet, the onward and upward trajectory of mega-events appears to have stalled as of late. Fewer and fewer cities have been inclined to bid for these events. Only two cities bid for the 2022 Winter Olympics (Almaty and Beijing) and the 2024 Summer Olympics (Los Angeles and Paris), after many had withdrawn from the process. Global opposition to the Olympics and the World Cup has emerged over the past years, highlighting increasing concern with these events as a mode of

unsustainable development (Boykoff 2020; Duignan et al. 2019, 2022; McGillivray & Turner, 2018; Weaver et al., 2021). More and more public referenda have rejected the hosting of mega-events, often accompanied by breaking news of bribery and doping scandals, and escalating costs. The COVID-19 pandemic has finally dealt another blow with the cancellation and postponement of events, large and small (Parnell et al., 2020).

The objective of this paper is to analyse the growth paths of the largest mega-events – the Olympic Games and the Men's Football World Cup – over a longer period to better understand growth dynamics and find out whether growth may have slowed as of late. It covers the growth of the Olympics and World Cup over more than five decades, from the 1960s to the late 2010s, through a custom-built database and a newly developed Mega-Event Growth Index (MEGIX) based on five dimensions – sport, spectators, media, marketing and costs – that allow to decompose growth into different aspects.

Empirically, the analysis of this unprecedented dataset contributes to mapping the evolution of the largest of events over time, identifying a recent crisis that has led to a stagnation in size and, in some cases, to the shrinking of the Olympics and the World Cup. It does by proposing as a methodological innovation a multidimensional growth index that serves to fashion a more nuanced analysis of growth over time and of its

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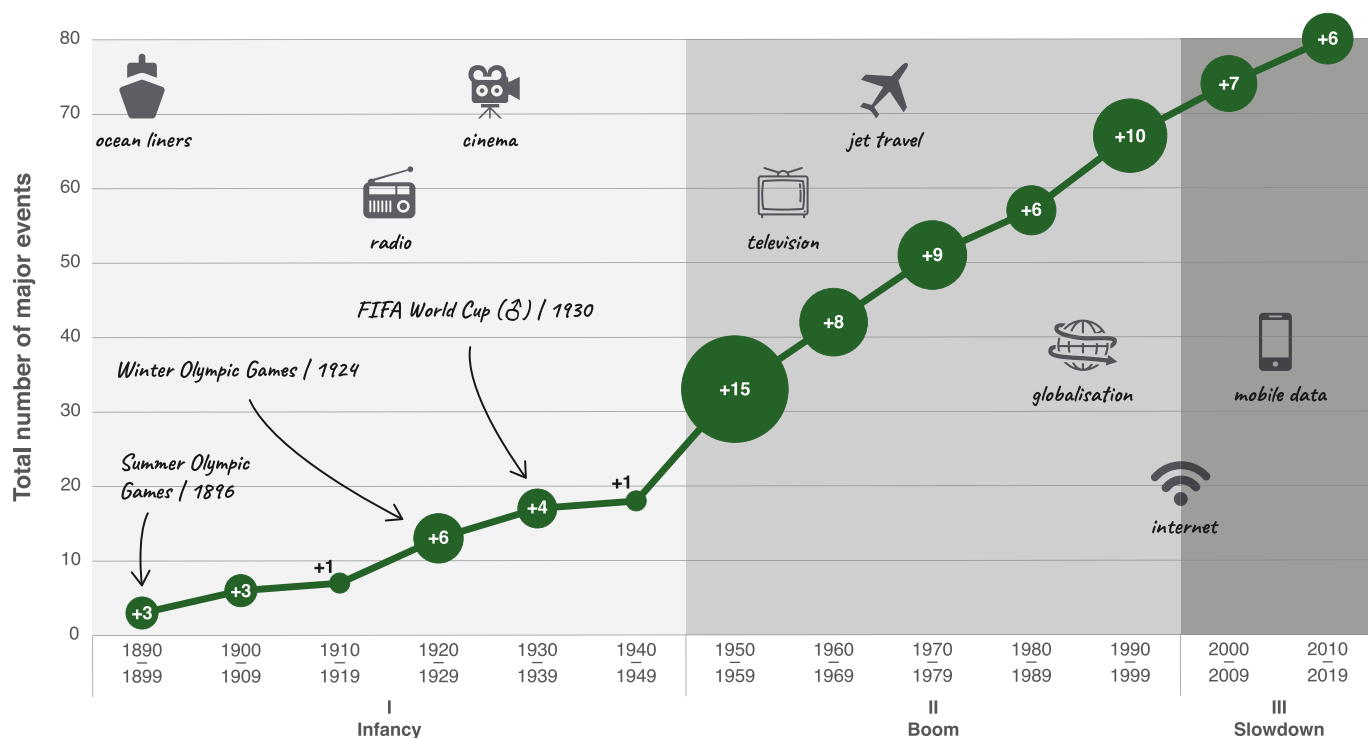
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divergent trajectories in different dimensions and events, allowing a more differentiated appreciation of the varied growth of mega-events in different aspects. Our findings suggest that the future of these two events is now highly uncertain and that previous growth might not continue, therefore questioning the implicit growth logic that has underpinned the Olympic Games and the World Cup for much of their existence. We may

have reached ‘peak event’: the point at which the size of mega-events starts to decline. Peak event, however, also opens new perspectives and strategies for event hosting and management, which are explored towards the end of this piece.



Single-sports events | Multi-sports events

1890–1899	IWF World Weightlifting Championships, UCI Track Cycling World Championships <i>Summer Olympic Games</i>
1900–1909	Artistic Gymnastics World Championships, World Figure Skating Championships, Wrestling UWW World Championships
1910–1919	CONMEBOL Copa América (♂)
1920–1929	IIHF Ice Hockey World Championship (♂), UCI Road Cycling World Championships, World Table Tennis Championships, Ryder Cup (♂) <i>Winter Olympic Games, FIS Nordic World Ski Championships</i>
1930–1939	FIFA World Cup (♂), FIS Alpine World Ski Championships, World Handball Championship (♂) <i>Commonwealth Games</i>
1940–1949	FIVB Volleyball World Championships (♂)
1950–1959	FIBA Basketball World Cup (♂), UCI Cyclo-Cross World Championships, FIVB Volleyball World Championships (♀), FIBA Basketball World Cup (♀), Rugby League World Cup (♂), AFC Asian Cup (♂), IJF World Championships, Africa Cup of Nations (♂), World Handball Championships (♀), World Biathlon Championships, UEFA European Football Championship (♂), World Curling Championship (♂) <i>Pan American Games, Summer Asian Games, Summer Universiade</i>
1960–1969	FISA World Rowing Championships, CONCACAF Gold Cup (♂), ISA World Surfing Games, World Orienteering Championships <i>Winter Universiade, Paralympic Summer Game, Pacific Games, African Games, Summer Special Olympics World Games</i>
1970–1979	World Karate Championships, FIH World Cup (♂), FIS Ski Flying World Championships, ICC World Cup (♀), FIH World Cup (♀), ICC World Cup (♂), World Curling Championship (♀) <i>FINA World Championships, Winter Paralympic Games</i>
1980–1989	Rugby World Cup (♂), FIFA Futsal World Cup (♂) <i>World Games, IAAF World Athletics Championships, IAAF World Indoor Athletics Championships, Asian Winter Games</i>
1990–1999	UCI Mountain Bike and Trials World Championships, FIFA World Cup (♀), IAAF World Half Marathon Championships, Rugby World Cup Sevens, Floorball World Championships (♂), World Cup of Hockey (♂), FIVB Beach Volleyball World Championships, FEI World Equestrian Games <i>IFSC World Championships, Parapan American Games</i>
2000–2009	World Team Table Tennis Championships, ISAF Sailing World Championship, World Baseball Classic (♂), ICC World Twenty20 (♂), ICC World Twenty20 (♀) <i>ITU Triathlon Mixed Relay World Championships, ITU World Triathlon Series</i>
2010–2019	WBSC Premier12, World Equestrian Games <i>Summer Youth Olympic Games, European Games, FIRS World Roller Games, European Championships</i>

Fig. 1. Increase in major sports events since 1890, in lockstep with technological advances in Western modernity: Six new large sports events saw the light of day on average each decade between 1890 and 2019, equalling more than one event every other year. While there was consistent growth up until World War II (phase I shows an average of three new events per decade), the rate of growth jumped after World War II. The 1950s saw a major boom in new sports events (+15 events) and then again during the 1990s (+10 events). Close to ten new events were created each decade in the boom phase from 1950 to 1999. The rate of growth has slowed since 2000 (phase III), with an average of 6.5 new events per decade. (Source: own compilation, using data from SportCal Major Sporting Index (2015–2017) and GSI Event Index (2018–2019) from Laffin et al. (2019 and earlier) to identify the largest current sports events; icons from flaticon.com).

2. Mega-events and modernity

2.1. Modernity, growth and the rise of mega-events

In this paper, we theorise mega-events as intimately tied to Western modernity, following the influential approach by Maurice Roche (2000, 2017). According to Roche, mega-events have been an integral part of Western modernity since the first such events (re-)emerged in the second half of the nineteenth century and thus been tied to ideas of progress and growth. In the primary phase of modernity (Roche, 2017, p. 15), mega-events such as the World Fairs and the Olympic Games reflected the quest for technological and industrial progress and the competition between nation-states. Mega-events were often seen as a peaceful means of engaging in competition by showing off technological and sporting prowess to visitors from near and far. The concern with measuring and classifying performance echoed the techno-rationalism that accompanied the emergence of industrial modernity. Early mass media in the form of newspapers and radio coupled those events with the emergence of an increasingly global and mobile society (Roche, 2000, 2017).

This early modernity coincided with, indeed was a driving factor of the increase in the number of new large sports events between the 1890s and the Second World War. During that period (marked with the Roman numeral I in Fig. 1), growth in the number of new events was steady at about three events per decade. This period saw the creation of the events that still dominate the landscape of sports events today: the Summer Olympic Games, the Winter Olympic Games, the Men's Football World Cup. The first Summer Olympic Games were initiated by the International Olympic Committee and held in Athens from 6 to April 15, 1896. While championships of individual sports (such as cycling, gymnastics and weightlifting) started to gain traction in the early 1900s (see Fig. 1), no major multi-sport event was inaugurated until the introduction of the Winter Olympic Games in 1924 (see Goldblatt 2016). After this, launching new multi-sport events became more common, with the Football World Cup and the Commonwealth Games following suit in 1930.

The emergence of mass consumption and the spread of television, in a second phase of modernity after the Second World War, made the proliferation of mega-events change gear (see Fig. 1). The boom period from 1950 to 1999 saw the creation of more than ten events, on average, each decade. 24 events were established between 1950 and 1969 alone. This significant increase can be attributed to the post-war growth in wealth and the rise of global consumer culture, which translated into the commodification of sports and the attendant growth of mega-events (Roche, 2000). The development of satellite communication technology created a large market for live sport transmission and boosted the interest in major sports events (Billings 2008). The spread of long-haul jet travel made attending mega-events in person attainable for an ever-larger number of people. This development turned them into major tourist attractions and into vehicles to shape an image of the host community or country, 'leading to its favourable perception as a potential travel destination' (Getz & Page, 2019, p. 142; see also Tomlinson and Young 2006). The tight link between mega-events and tourism kickstarted mega-events research in tourism studies (Jafari 1988). For cities, mega-events became the occasion for pushing large-scale urban development and destination marketing ambitions (Gold and Gold 2016). The 1992 Summer Olympics in Barcelona are the best-known example of massive regeneration in the wake of mega-event preparation to change a city's infrastructure and image. The hosting of the Olympics contributed to turning Barcelona into an attractive tourist destination and the emergence of the so-called "Barcelona Model" of urban development (González 2011). The pyrrhic side of this growth-oriented logic has appeared in recent years, with an ever-increasing number of tourists and resulting anti-tourism campaigns emerging in Barcelona and many other popular destinations (on over-tourism and the Olympics see Schnitzer et al., 2020; Duignan et al., 2022).

It was the 1990s that posted strong growth again in the number of new events, with ten events added in that decade. This decade saw a further expansion of the modern growth logic, with an increasing commercialisation of events through sponsorship schemes and broadcasting contracts (Hall, 2006; Horne and Manzenreiter 2006). New markets emerged in the countries of the Global South and East and cable television expanded in the Global North (Gruneau & Horne, 2015; Müller & Pickles, 2015), thus allowing to further growth the customer base and revenue of mega-events in as yet untapped markets.

2.2. The crisis of mega-events

Entering the 2000s, however, the limits of the modern growth model that gave rise to mega-events, based on expanding resource extraction, high carbon consumption and mass mobility, have become ever more apparent (Moore, 2015). Scientists urge that radical transformations of our late-modern lives are inevitable over the next decades to remain within planetary boundaries while still guaranteeing an acceptable level of human well-being for all (Steffen et al., 2015). As offspring of Western modernity, mega-events will not remain unaffected by the recent crisis of the very modernity that made their rise possible. A multifactorial process, encompassing environmental, social and economic dimensions (see Fig. 2) has led to an attendant crisis of mega-events. In the following, we discuss what we consider as the six most influential factors that combine to produce a crisis of mega-events, acknowledging that there will be several more.

Market saturation: Mega-events have, in the decades of rapid growth, engaged in a classic widening and deepening of the market. Widening refers to expanding to ever more countries and thus reaching more people. Thus, the Olympics and the World Cup extended their reach to the countries of the former Soviet Union (Winter Games Sochi 2014; World Cup Russia 2018), Africa (FIFA Men's World Cup South Africa 2010), South America (Summer Games Rio 2016), China (Summer Games Beijing 2008 and Winter Games Beijing 2022) and the Middle East (FIFA Men's World Cup Qatar 2022). Deepening refers to offering ever more content, such as creating new events or adding new sports, more teams and athletes (e.g. an expansion from 32 to 48 teams for the FIFA Men's World Cup from 2026) and more coverage (e.g. through the year-round Olympic Channel broadcast) to existing events. As more and more new events are created, however, some struggle to attract sufficient attention and spectators. In the United States, the most mature market for spectator sports in the world and thus a bellwether of the shape of things to come, stadium attendance across several major sports has been declining for the last few years, even before the COVID-19 pandemic, despite ever more intense efforts to attract crowds (Broughton & Levin, 2020; Leitch 2018; Wilder, 2020). While empty seats are a recurrent problem, the World Athletics Championships in Doha in 2019 suffered from such a dire lack of attendance that it caused international uproar (Ingle 2019). Moreover, funding for hosting new events is also increasingly difficult to obtain. In 2019, San Diego failed to find enough money for the inaugural edition of the World Beach Games, passing them on to Qatar at short notice (Mulvenney, 2019). Even top-tier events such as the Men's Football World Cup have struggled to attract and retain globally recognized sponsors (Kaplan 2018).

Economic underperformance: In addition, more and more people and communities have developed an acute awareness that the costs of mega-events – social, financial and environmental – usually exceed their benefits. Academics and activists have garnered significant attention in policy circles with publications that demonstrate the unfavourable cost-benefit ratio of mega-events (e.g. Müller et al., 2022; Zimbalist, 2015). Global media widely reported the negative fallouts from the Olympic Games in Sochi in 2014 and in Rio de Janeiro in 2016, from human rights violations to financial excess and dubious legacies (Zimbalist, 2015). Promises about temporary and permanent boosts in tourism have also often rung hollow. Thus, Chalip (2015:249) argues that for an event to create a positive tourism benefit "it needs to attract tourists at times

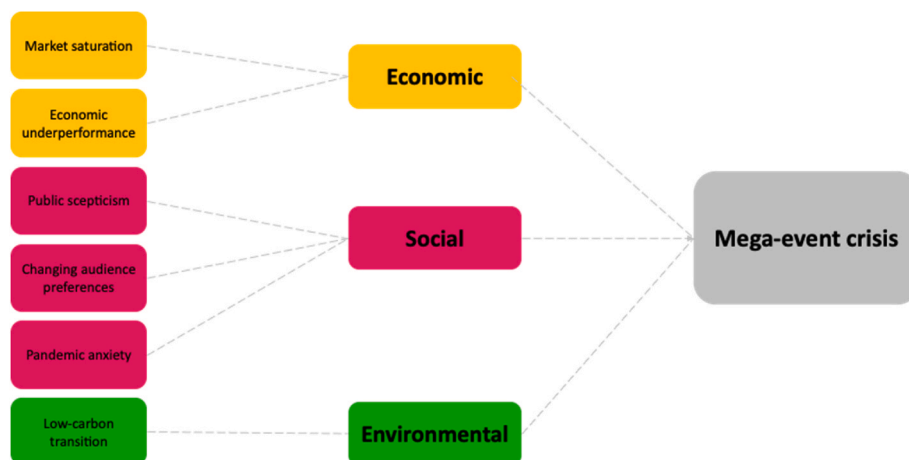


Fig. 2. Factors contributing to the current crisis of mega-events.

when hospitality providers are operating below capacity". However, this is not always the case for major sporting events and research shows inconclusive effects, including some sharp decreases in tourism (Delaplace 2019; Vierhaus 2019).

Public scepticism: Public opinion in many cities has also turned against mega-events. Promises by mega-event boosters of increases in jobs, a transformation of a cities' image and extensive new infrastructure are now subject to intense public scrutiny. Continuous doping cases and corrupt dealings of mega-event owners have caused public outcry and increased pressure for mega-event reforms (Weaver et al., 2021) and, sometimes, even criminal charges (Kihl et al., 2017). Partly as a result, a global resistance movement to mega-events has emerged in recent years that seeks to counter the global network of boosters with an equally global network of vocal critics that join forces with local activists (Boykoff 2020; Lauermann & Vogelpohl, 2019). Negative results in public polls (as for Boston's bid for the 2024 Olympics or Oslo's bid for the 2022 Winter Olympics), failed referenda on bidding (e.g. Innsbruck and Vienna in Austria, Munich and Hamburg in Germany, Calgary in Canada, Cracow in Poland, Davos/St. Moritz and Sion in Switzerland) and a lack of sensitivity to local contexts in host contracts (Kelly et al., 2019) have made politicians at the metropolitan and national levels wary of organising bids for large events (McGillivray and Turner 2018). Concerns about mass tourism and overtourism, intimately connected to late modernity, have contributed to the rejection of ambitions for Olympic bids in referenda (Coates & Wicker, 2015; Oliver & Lauermann, 2017; Schnitzer et al., 2020).

Changing audience preferences: When turning the focus from residents to audiences, mega-events turn out to be on the wrong end of a long-term change in consumption practices that breaks with modern ideals of prefabricated mass consumption. The standardised mass spectacle of large events – 40,000 people in a starchitect-designed stadium to watch the same game – has little to do with a simple, individualised, sustainable and respectful tourist experience, rooted in the particularities of a place. Yet, this is what more and more tourists are looking for in the search for authentic experiences (Getz & Page, 2019; Yeoman, 2013). Media consumers, too, increasingly expect an *à la carte* experience. Getz argues for more demand-based events, more bottom-up involvement in event planning than the current strict top-down (especially relevant for mega-events) and the emergence of local, recurring events due to the high cost of bidding (Getz 2019). In the age of video on demand, best embodied by the streaming platform Netflix, pre-programmed broadcasts at fixed times are out of sync with consumption habits. A younger generation of viewers is becoming used to an 'anywhere, anything, anytime' model of individualised media consumption, often coupled with the expectation that content be provided for free. This rubs against the dominant broadcast model of mega-events, which depends on

awarding exclusive rights to television networks for predetermined time slots (Hutchins et al., 2019; Horne & Whannel, 2020, pp. 207–214).

Pandemic anxiety: The COVID-19 pandemic that started in early 2020 has wreaked havoc on the event and tourism sectors. While scholars and practitioners are still grappling to understand the potential long-term impacts of the pandemic, 'it is difficult to view that society and sport can return to the status quo in the impending years' (Parnell et al., 2020, p. 5). Large events have long been recognized as potential super-spreaders of infectious diseases: tens of thousands of people from all corners of the world squeezed into a stadium are the ideal setting for a global pandemic. This risk has even triggered the formation of a new subdiscipline of 'mass gatherings medicine' in 2014 (Memish et al., 2019). The current pandemic has driven home the necessity of taking adequate precautions, which might include cancelling events at short notice. More importantly, it has recoded the affective value of mass gatherings. Where previously a crowd of people packed into a stadium or partying on a public square after medal ceremonies induced joy and a celebratory mood, mass gatherings now instil fear. The COVID-19 pandemic might ingrain this fear so deeply, that we could see sports events with much fewer spectators than in the past - or indeed no spectators, as has become common in stadiums and arenas around the world.

Low carbon transition: The transition to a low-carbon social and economic model is required to meet the 2015 Paris Agreement goal of keeping global warming to below 2 °C. To reach this goal, many high-income economies have committed to achieving carbon neutrality by 2050. By contrast, mega-events have relied on a high-carbon, resource-intensive business model: Nowhere is this more evident than in the companies that are sponsoring these events and have become their primary drivers since the commercialisation of sports: Castrol, Coca-Cola, Dow Chemical, Gazprom, Hyundai, McDonald's, Qatar Airways, and others are the giants of the modern economy of the 20th century economy, with extractive or harmful business models ill-adjusted for the sustainability transition. Moreover, mega-events depend on international travel: international tourists, media representatives, and athlete delegations mostly fly to and from host cities. The Rio 2016 Summer Games were attended by 380,000 foreign tourists, 25,000 journalists and more than 10,000 athletes (Müller & Gaffney, 2018, p. 298), most of whom had arrived by plane. 'Green deals' are likely to introduce carbon taxes and other regulation that will affect carbon-intensive industries involved in the realization mega-events and the tourism infrastructure around them.

These elements of a crisis together raise serious questions about the future of mega-events and event tourism. Might a century-long history of growth be drawing to a close? Might the size of large sports events decline? In other words: Have we reached peak event?

3. Research design

3.1. Constructing the Mega-Event Growth Index (MEGIX)

Our goal for the research design was to trace the evolution of the size of events over time in a differentiated fashion, focusing on three of the largest mega-events: the Summer and Winter Olympic Games and the Men’s Football World Cup. To provide a differentiated analysis of their growth and possible decline, we developed an index of mega-event growth, the Mega-Event Growth Index (MEGIX) containing five dimensions: sports, media, spectators, marketing and costs (see Fig. 3). These dimensions are those most commonly addressed in literature on the size and growth of mega-events (e.g. Chappelet 2014; Fett 2020; Müller, 2015; Preuss, 2004), as they reflect the multiple nature of mega-events as, first, competitions for athletes; second, globally broadcast media events; third, tourism events; and fourth and last,

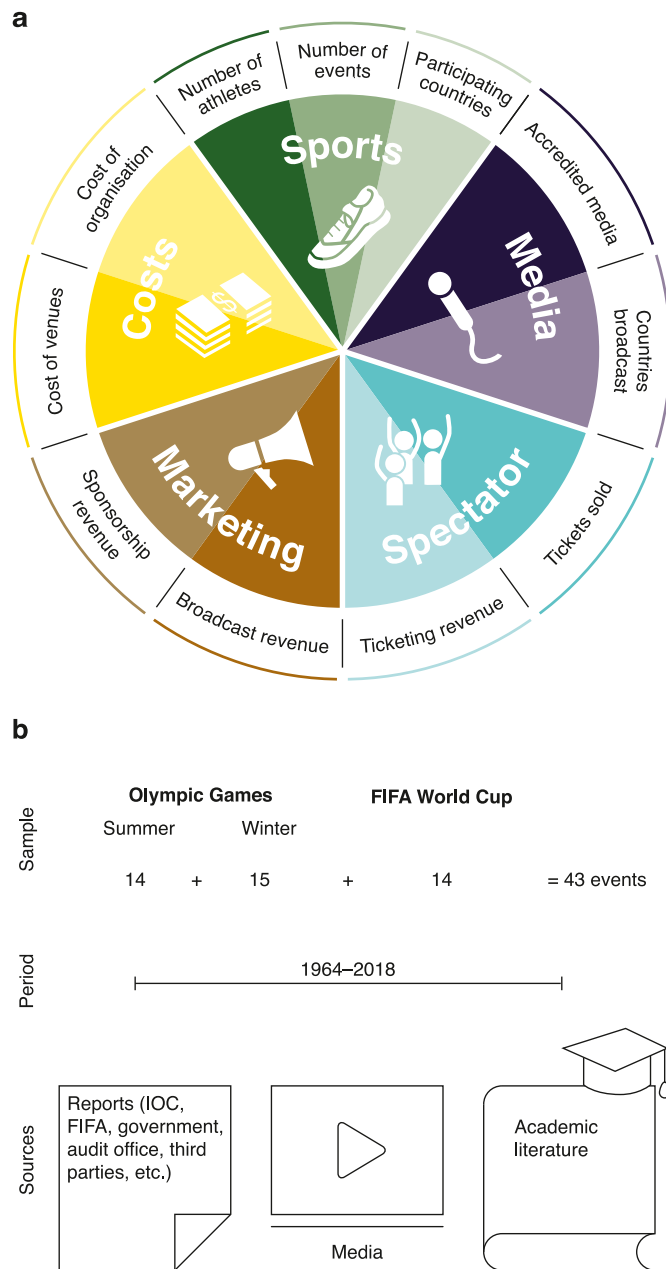


Fig. 3. Research design for measuring the growth of mega-events **a** Dimensions and indicators of the Mega-Event Growth Index (MEGIX) **b** events in the sample, sample period and data sources.

economic ventures (see Horne & Whannel, 2020 and Roche, 2000 for a discussion of the multiple dimensions of mega-events). This index constitutes a methodological innovation, as it allows tracing the growth of all mega-events – not just the Olympics and the FIFA Men’s World Cup – over time and across the multiple dimensions that make up these events.

We then applied the Mega-Event Growth Index to all editions of the Summer Olympic Games (14 editions), the Winter Olympic Games (15 editions) and the Men’s Football World Cup (14 editions) between 1964 and 2018. Our sample starts in 1964 for two reasons. First, the early 1960s mark the beginning of a period of strong expansion in the size of these events, with the development of live satellite transmission and the increasing impact of urban interventions linked to these events (Essex & Chalkley, 1998; Horne & Whannel, 2020). Second, data availability for our ten indicators is patchy before 1964, which would make analyses unreliable.

3.2. Data collection and preparation

Data were collected from publicly available sources, including Official Reports from Organising Committees, the IOC, FIFA and host governments, audit reports, media and the academic literature (see Anonymous Author Reference for details). 17 out of a total of 477 data points, or 3.56%, are missing. Some are missing due to the absence of certain revenue streams, such as sponsorship and broadcasting, early in our sample period; others because of a lack of transparency or perhaps deliberate opaqueness. For instance, the budget figures released in the final report for the 2006 Winter Olympics in Torino were presented simply as ‘1229’, without indicating currency or units. Only further search revealed this to be in millions of EUR. We imputed 17 missing values using a linear regression model generated via the “predict.lm” function in RStudio software (R Documentation 2021). Imputed points are only used for calculating composite and combined scores. To draw meaningful comparisons for indicators that contained financial data in various currencies from different time periods, we first converted them to US-Dollars (USD) using the World Bank national currency unit values and then applied the World Bank Consumer Price Index to inflate to the base year of 2018 (for the method adopted see Turner et al., 2019, p. 1023). We thus arrive at USD₂₀₁₈, which allows comparing monetary values in real terms, adjusted for inflation. Since the IOC’s global sponsorship programme does not break down revenue per Olympic Games (only per quadrennium), we applied a 2:1 split between Summer and Winter Games.

To make growth comparable across different units of measurement, we converted the absolute values of indicators to relative values by indexing the first edition of each event in our sample to 1. A value of 2, for example, means that the size has doubled in comparison to the first event in the series. To obtain the Mega-Event Growth Index for a particular event, we then calculated a sub-index for each dimension by taking the mean of the respective indicators’ relative scores and then weighing each sub-index equally:

$$MEGIX_n = \frac{1}{15} \left(\frac{i1_n}{i1_a} + \frac{i2_n}{i2_a} + \frac{i3_n}{i3_a} \right) + \frac{1}{10} \left(\frac{i4_n}{i4_a} + \frac{i5_n}{i5_a} \right) + \frac{1}{10} \left(\frac{i6_n}{i6_a} + \frac{i7_n}{i7_a} \right) + \frac{1}{10} \left(\frac{i8_n}{i8_a} + \frac{i9_n}{i9_a} \right) + \frac{1}{10} \left(\frac{i10_n}{i10_a} + \frac{i11_n}{i11_a} \right)$$

where n is the event of interest, a is the first event in the series, and $i1$ to $i11$ are the absolute values of the eleven indicators, where $i1$ to $i3$ refer to the sports sub-index, $i4$ to $i5$ to the media subindex, $i6$ to $i7$ to the spectator sub-index, $i8$ to $i9$ to the marketing sub-index and $i10$ to $i11$ to the costs sub-index (see Fig. 3a).

In a final step, we combined the values of the five dimensions across the three events to obtain a ‘combined size score’. For this purpose, we calculated the mean of the MEGIX values of the three events in the same period, e.g. the Football Men’s World Cup in 1966, the Summer Games of 1964 and the Winter Games of 1966, giving equal weight to each

event. As the Albertville 1992 and Lillehammer 1994 Games took place in the same period due to a change in rhythm for the Winter Olympics, we weighted each at half of the regular weight.

4. Analysis of mega-event growth and crisis

4.1. Maximum values

Fig. 4 shows the events and absolute values in which each of the eleven indicators of the index reached their maximum. We see that in six out of the eleven indicators the maximum value did not occur in the most recent event in the sample, thus providing a first hint at shrinkage. The record of the highest value is held by the Summer Olympics for seven out of the eleven indicators, by the World Cup for two (broadcast revenue, sponsorship revenue) and for the Winter Olympics in one (cost of venues). The number of countries receiving a broadcast from the event is equal for all three events, resulting in a tie. We can see that while the World Cup outperforms the Olympic Games in marketing revenue, the Olympics are larger in the sports, media, spectator and cost dimensions.

4.2. Largest events

The Summer Olympics, the Winter Olympics and the FIFA Men's World Cup grew substantially from 1964 to 2018. Fig. 5 shows the development of the Mega-Event Growth Index (MEGIX) over time.

The 2012 London Summer Olympics was the largest Summer Olympics in our sample. In absolute values, it was the largest Summer Olympics in the spectator and cost dimensions and it ranked second in the sport, marketing categories and third in media right after the 2016 and 2008 editions of the Summer Olympics. The 2014 Sochi Winter Olympics were the biggest Winter Olympics overall and also the largest Winter Olympics in the media and marketing dimensions. It ranked also high in the spectator dimension and was the second largest Winter Olympics in the sport category. With over 15 billion USD₂₀₁₈, Sochi was also the largest in the cost category among all 43 events in our sample. The 2018 Men's World Cup in Russia was the largest World Cup in our

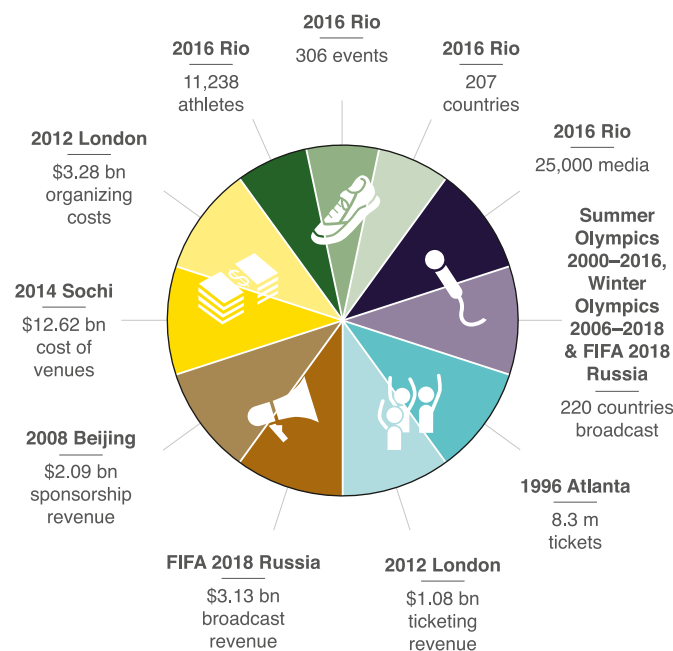


Fig. 4. Maximum absolute values for each indicator and associated event in the sample. The FIFA Men's World Cup has higher broadcast revenue, but the Olympics lead on other fronts with higher maximum sponsorship revenue, costs and ticketing revenue and a larger sports dimension. \$ = USD₂₀₁₈.

sample (tightly followed by the 2014 World Cup in Brazil). It was the largest across all dimensions except for spectator and costs, where the 2014 Brazil and the 2002 Japan and South Korea, respectively, maintain the lead.

4.3. Growth phases

Overall, the three mega-events combined have grown more than 110-fold from the first period (1964–1966) to the last period (2016–2018) of our sample. The growth data of Fig. 5 allow us to distinguish four distinct phases of growth with statistical significance (ANOVA: SOG: $F(3,10) = 18.02, p < 0.01$; WOG: $F(3,11) = 10.4, p < 0.01$; FWC: $F(3,10) = 14.2, p < 0.01$; Combined: $F(3,10) = 12.5, p < 0.01$).

Warm-up phase (1964–1986): Growth was already high from the 1960s to the early 1980s (as indicated by the steep slope of the log graph), although absolute values were low compared to today. The three events remained rather modest in size across all dimensions. Income from sponsorship and broadcasting rights as well as from ticket sales was still small. Despite the availability of live broadcasting and the increasing global reach of these events, these channels were not yet commercialised to a significant degree.

Spurt phase (1988–2002): The 1980s continued strong growth, in particular through the introduction of sponsorship programmes and systematic marketing of broadcasting rights. This made the early events in that period already 20 times larger than the events in the 1960s. This phase coincided with a shift in urban politics and management that pushed more and more cities to bid for mega-events as part of entrepreneurial strategies of urban development and therefore encouraged public investment in mega-events (Andranovich et al., 2001; Harvey 1989). This growth was supported by the significant improvements in the international travel opportunities that boosted the number of visitors attending the Olympics and the FIFA World Cup. This upsurge of the spectator dimension was particularly significant in the Winter Olympics, when the ticketing revenue of this phase was over 140 times higher compared to the previous one. We can see a clear difference in this phase between the Olympics and the World Cup. While the growth rate of the World Cup also accelerated from the 1980s, the most significant uptick did not occur until the early 2000s. For example, the Summer Olympics passed the one billion USD₂₀₁₈ marker in broadcasting income already in 1992, while it took ten more years for the Men's Football World Cup to reach that milestone. However, the latter grew more dramatically. While throughout the 1980s and 1990s the World Cup lagged behind the Olympics regarding marketing income (almost 5 times less than the Summer Olympics and 3 times less than the Winter Olympics), the sale of TV and sponsorship rights for the World Cup in 2002 in Japan and South Korea led to a surge in marketing income to more than 2.2 billion USD₂₀₁₈. Since then, income from this dimension for FIFA has never dropped below the 2 billion USD₂₀₁₈ mark and the 2018 World Cup was the largest ever in the marketing dimension within our sample.

Consolidation period (2004–2014): Moving into the 2000s, the three mega-events continued to grow, though on a markedly slower growth path. On average, these events were about 80–100 times larger than the first events in our sample. The end of this consolidation period saw the occurrence of the largest events for the Olympic Games (London 2012; Sochi 2014), but not for the FIFA Men's World Cup, which continued to its growth with Russia 2018. In the consolidation period, the three mega-events expanded to emerging countries, with the first Olympic Games in China (2008), the first Olympic Games in Russia since the end of the Soviet Union (Sochi 2014) and the first World Cup in Africa (South Africa 2010). While the marketing dimension continued to be a dominant driver of that growth, increasing costs, in particular in emerging countries, also made a strong contribution to overall size.

Crisis period (2016-): In the second half of the 2010s, the combined size of mega-events started to decrease. FIFA and the IOC found themselves facing increasing criticism due to the perceived wastefulness and

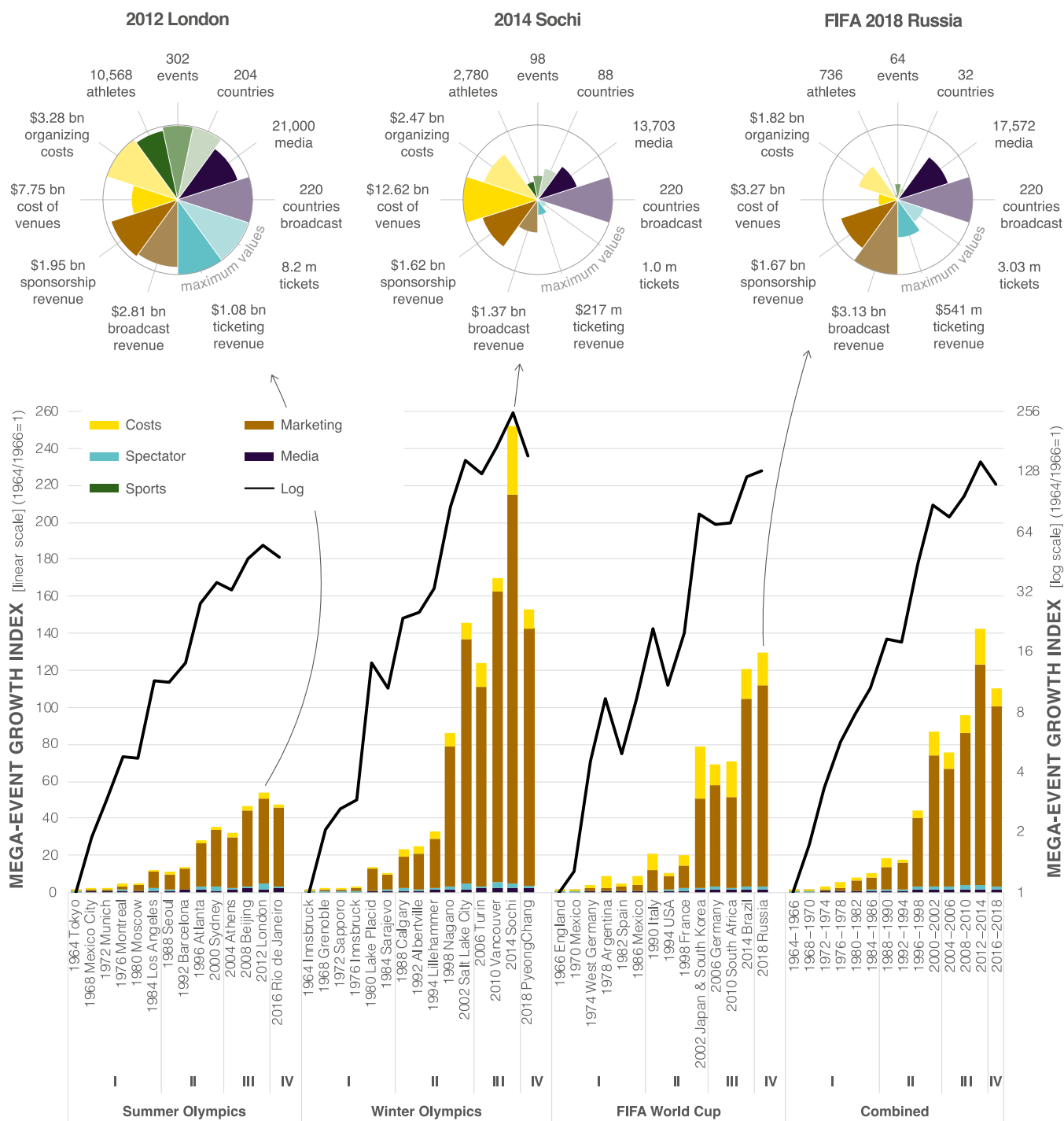


Fig. 5. Growth of the Olympic Games and the Football World Cup compared, 1964 to 2018 (1964/66 = 1). Growth was strong from the start in the 1960s and 1970s (I = warm-up phase), as indicated by the logarithmic transformation, though low in absolute numbers. From the mid-1980s we see a marked jump through the commercialisation of marketing rights for the events, and growth was high until well into the 1990s (II = spurt phase). Throughout the consolidation phase of the 2000s and the first half of the 2010s (=III), growth was less than in the previous two phases. A crisis phase announced itself from 2016 (=IV), as the size of all events declined from previous peaks except for the FIFA World Cup. \$ = USD₂₀₁₈.

excessive size of Sochi 2014 and the World Cup 2014 in Brazil (e.g. Chade 2017; Gibson 2014). This led the IOC to start a reform process from 2014, aimed at reducing the size of the event to make it more attractive to hosts. FIFA experienced a change in leadership after the corruption scandal of 2015 and embraced limited reforms after the wide-spread criticism of its handling of the 2014 World Cup in Brazil. However, the impact on the size of the FIFA World Cup has been limited,

as it still continues to grow. This crisis period continued with the arrival of the COVID-19 pandemic (not represented in our sample) and the imminent downsizing of national delegations and media contingents while spectators were completely absent from Tokyo 2020 (Lutton, 2021; Moody 2021). Thus, the latest Summer Olympics edition shrunk even further in the sports, media and spectator dimensions, compared to Rio 2016.

4.4. Growth compared between events and dimensions

Table 1 calculates growth from the first three events in the sample to the last three (which corresponds roughly to a period of 50 years), thus smoothing out fluctuations in individual events. It demonstrates that, of the three event types in our sample, the Summer Games have experienced the weakest overall growth, but still have grown more than 25-fold between the first and the last three events in our sample. By contrast, the Winter Games have grown more than 100-fold and the World Cup almost 50-fold. Thus, although the Summer Games are the largest event for many indicators in absolute numbers, the Winter Olympics and the World Cup have followed much steeper growth paths. These three mega-events have, on average, grown about 13 times faster than world GDP in about the same period (see Table 1).

Table 1 also shows that growth is unevenly distributed between the five dimensions of our model. The sports dimension has posted the weakest increase, barely doubling between the beginning and the end of our sample, and thus growing much less than world GDP in the same period. The media dimension comes next, with a five-fold increase in that period, a little above the growth of world GDP. The spectator dimension, too, has grown, in particular for the Winter Olympics. On average, the last three events received seven-times more spectators and ticket revenue than the first three, reflecting substantial growth in tourist capacity and attractiveness of the host locations. It is in the marketing dimension that growth has skyrocketed. These three mega-events now bring in over 163-times more marketing revenue than in the 1960s and early 1970s, with the Winter Olympics holding the lead at 290 times. On average, marketing revenues have surpassed GDP growth by 37 times! Finally, while costs have also increased 19-fold on average, they have not kept pace with marketing revenues. This comparison illustrates that, while the growth of costs is a concern, growth in marketing revenues has far surpassed growth in costs. This dynamic underscores that the Olympics and the World Cup have become very profitable for their owners, the IOC and FIFA, not least because the largest cost item – venue costs – is borne by host cities and countries, not by event owners.

4.5. Growth by dimension

Let us now look at each dimension and its indicators in detail. Fig. 6 provides a detailed breakdown of the growth of each dimension in its indicators.

Sports dimension: Both the Summer and the Winter Olympic Games demonstrate an initial fluctuation in the size of the sports dimension, but from the mid-1980s a clear upward trend emerges. The fluctuation in the size of the sports dimension was mostly caused by changes in the numbers of participating athletes and countries, while the number of sports competitions in the Olympics has always been rising. Growth has been more marked in the Winter Olympic Games. The 1964 Innsbruck Games, for example, had 1091 athletes from 36 countries competing in 36 events, while there were 2833 athletes from 92 countries competing in 102 events at Pyeongchang 2018. There has been a lower growth rate for the Summer Olympics where 5558 athletes from 94 countries

competed in 163 events during the 1964 Olympics, increasing to 11,238 athletes from 207 countries competing in 306 events in 2016. Since the 2000 Summer Games in Sydney, the sports dimension of the Summer Olympics has been mostly stable, reflecting perhaps the IOC Study Commission recommendations to limit growth (Olympic Games Study Commission, 2003).

Unlike the Olympics, the growth of the FIFA Men’s World Cup has been more stable. It has three distinct stages, which are defined by the growth in the number of participating teams. This led to an increase in the number of matches (events) played within each edition: from 32 to 38 in the 1960s–1970s, to 52 from 1982, to 64 from 1998. FIFA plans to increase the number of teams to 48 from the 2026 edition (BBC 2019), resulting in an 80-match event.

Media dimension: There has also been an upward trend in the media dimension of mega-events (Fig. 6b). All three events have achieved almost full coverage in all countries worldwide since the late 1990s and early 2000s. It was the Summer Olympics that were broadcast to more than 200 countries first, in 1996, while the FIFA World Cup (2002) and the Winter Olympics (2006) followed.

The growth trend, although less stable, is also apparent in the number of accredited media representatives at the Olympics and the Football World Cup. Factors such as the remoteness of the host (Sydney 2000), a more recent development of the sports culture in the host country and region (South Africa 2010 and Pyeongchang 2018) and political boycotts (Moscow 1980) appear to have a negative impact on media attendance. Both the Winter Olympic Games with 13,703 accredited media personnel in Sochi in 2014 and the FIFA Men’s World Cup with 18,850 media in Germany in 2006 are beyond their high point, and these records still stand. The Summer Olympics, however, posted the high watermark in media personnel for the 2016 Olympics in Rio, at almost the same as the number of media personnel as in Beijing in 2008 (close to 25,000).

If we look at the combined trend for the media dimension, the most recent period is the highest, but growth has almost come to a standstill. As all three events are now broadcast around the world, further growth will be driven by the number of journalists that travel to report on the event. That number was halved at Tokyo 2020 due to pandemic-related restrictions (Lutton, 2021).

Spectator dimension: While following a general growth trend, the spectator dimension has experienced intense fluctuation over the years and there have also been drops after several editions of events in each category (see Fig. 6c). Several factors probably drive this dynamic, starting from stadium capacity to the political environment and economic circumstances at a particular event. Thus, the economic recession, political instability and the widespread Zika epidemic in Brazil led to a significant reduction in international visitors and empty seats in many competition venues during the 2016 Summer Olympics in Rio (Ansari 2016), where only about 6.2 million tickets were sold. The previous edition of the Summer Olympics, held in London, outperformed Rio by selling about 8.2 million tickets. Due to higher venue capacity and significantly higher ticket prices, London brought in over three times more revenue from tickets, reaching a record one billion USD₂₀₁₈.

Table 1

Relative growth from first three events of the sample to the last three (ca. Late 1960s/early 1970s to late 2000s/2010s), compared to growth of world GDP in constant USD (source: World Bank). The Winter Olympics post the strongest growth, whereas the Summer Olympics have a more moderate growth path. Growth in marketing revenue dominates with a 163-fold jump, while the sports dimension has barely doubled. This development illustrates the transformation of mega-events from sports competitions to commercial enterprises.

	Summer Olympics	Winter Olympics	Football World Cup	Combined (all events)	Growth of world GDP 1968–2014 (comparison)
Sports	1.9	2.4	1.9	2.1	
Media	4.9	7.3	3.9	5.4	
Spectator	5.4	9.5	6.3	7.1	
Marketing	74.6	289.7	125.9	163.4	
Costs	5.3	30.9	20.6	18.9	
Composite (all indicators)	25.7	101.5	47.1	58.1	4.4

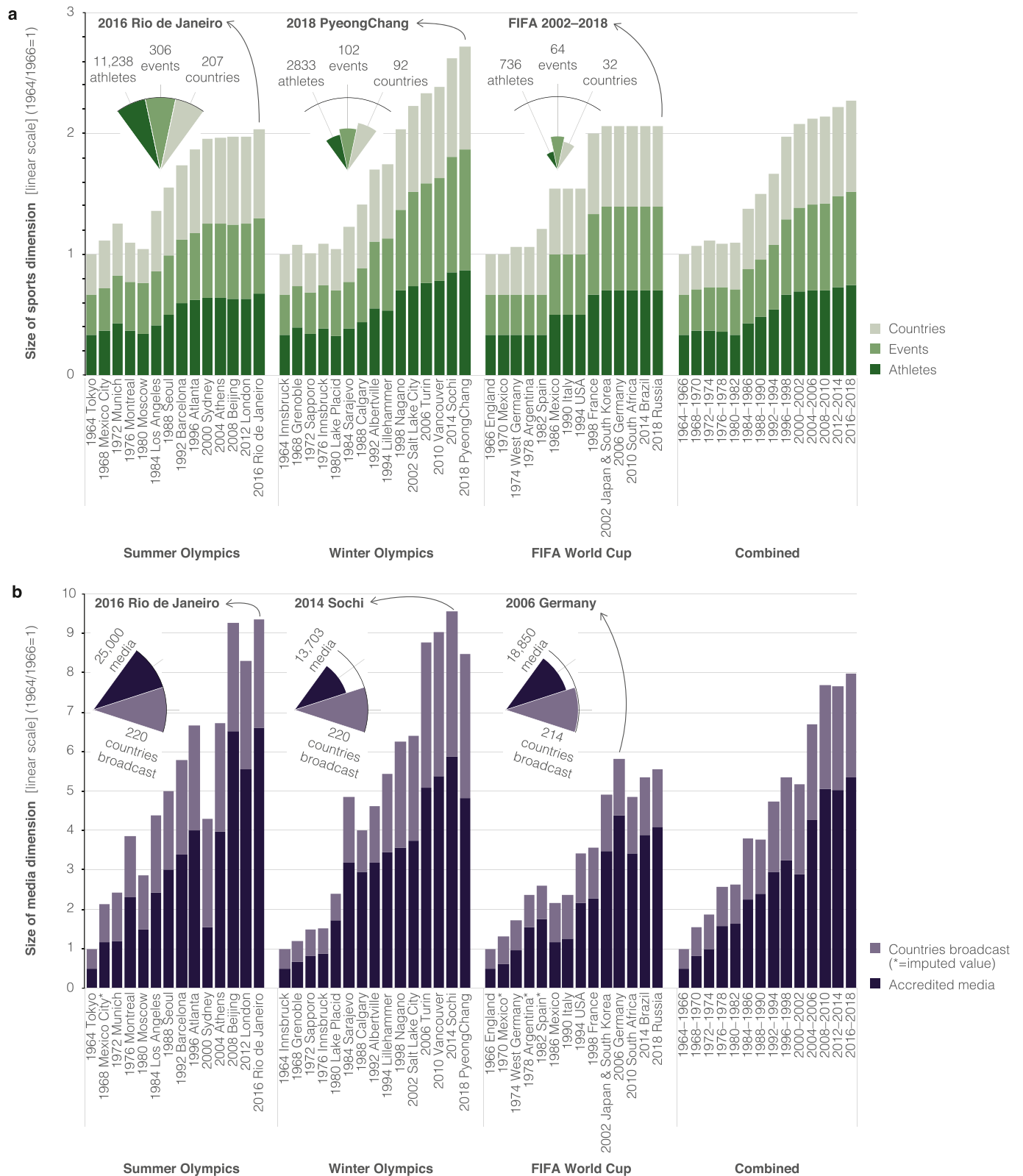


Fig. 6. a–e: Growth of the Olympic Games and the Football World Cup in each of the five sub-indices, by indicator, 1964 to 2018 (1964 = 1). While the sports and marketing dimension have rather steady growth paths, those of the media, spectator and cost dimension are more volatile. Size has significantly declined in the latest period (2016–2018, combined) for the spectator and cost dimension, while it has slightly increased for the three others. Note that the marketing and cost dimensions require logarithmic scales for better display of values early in the sample period, due to the strong growth.

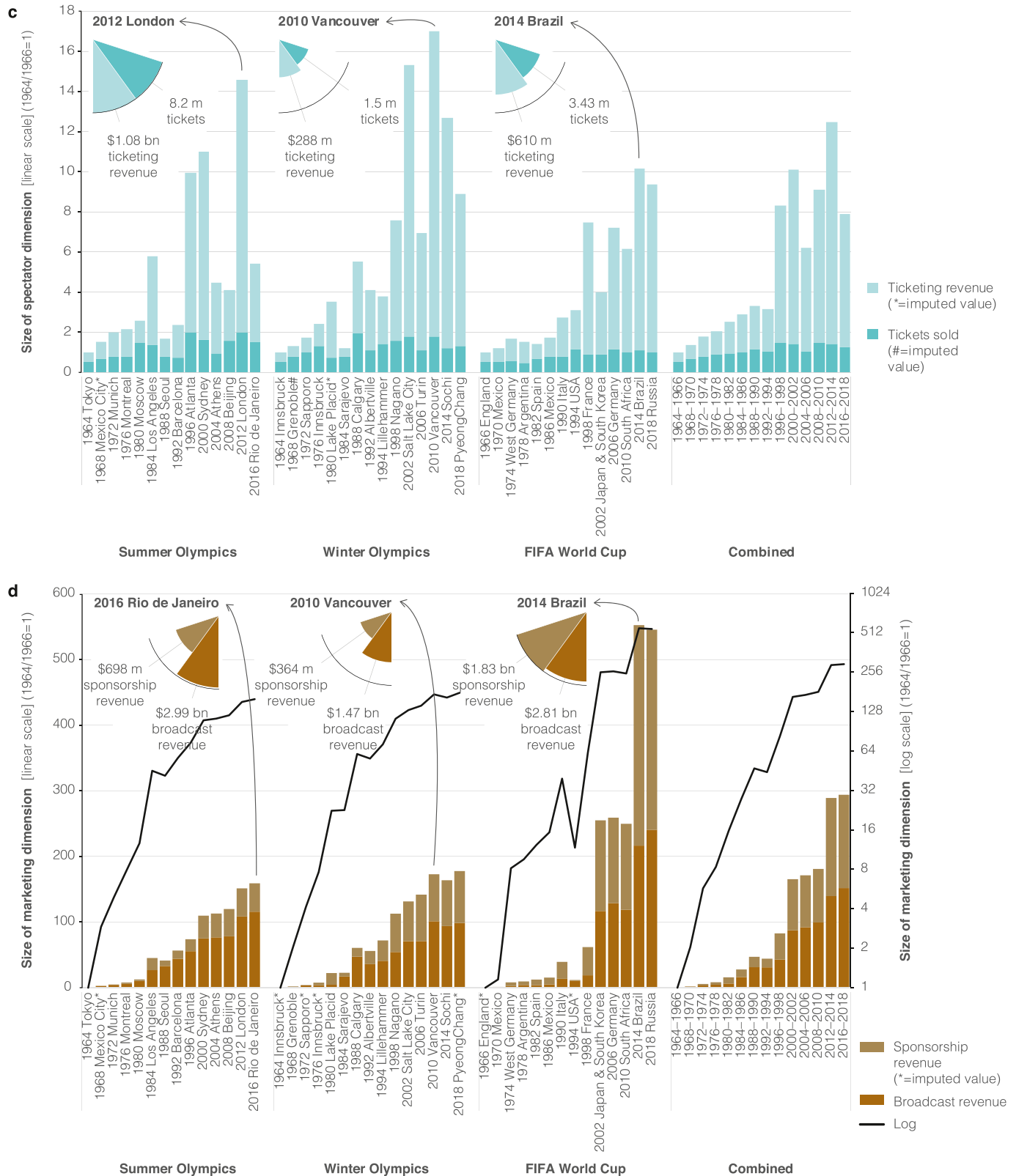


Fig. 6. (continued).

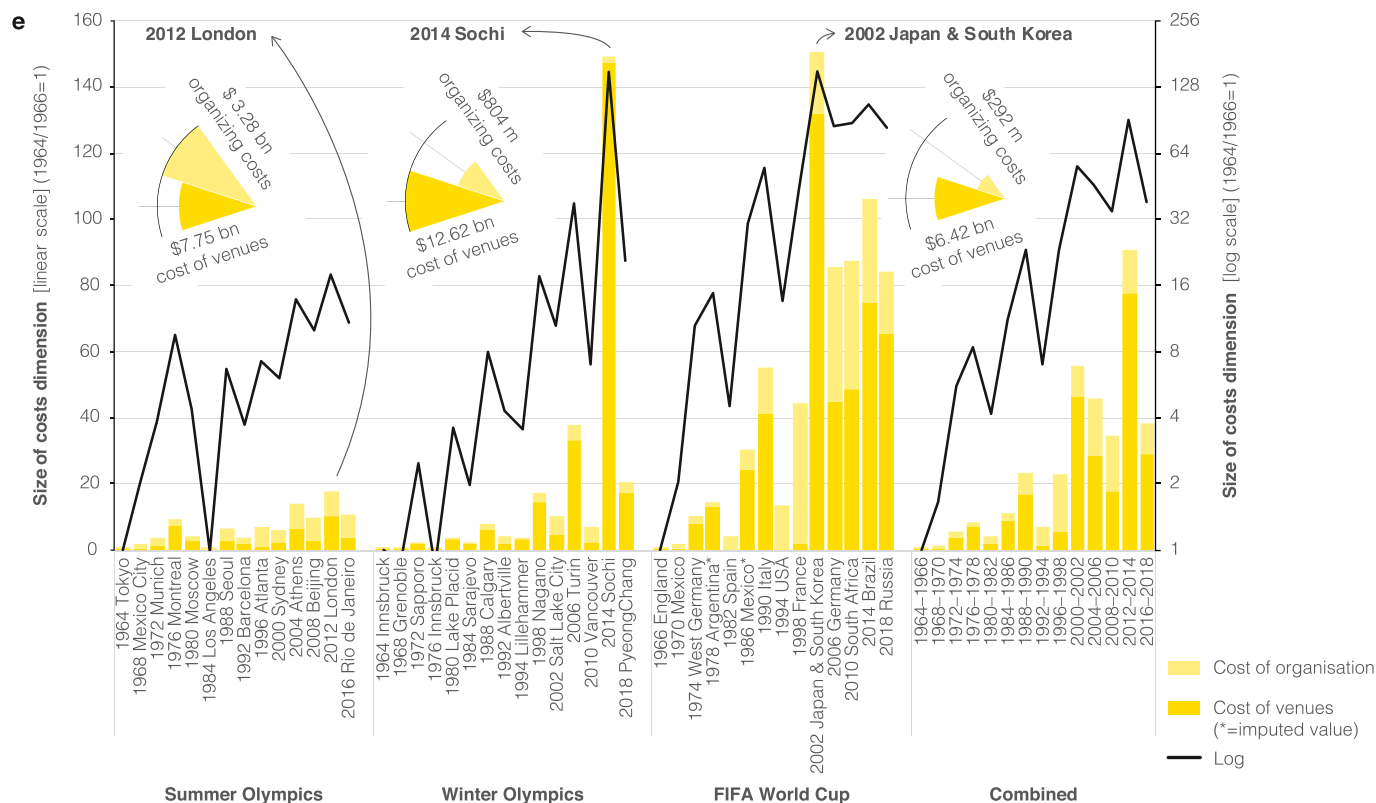


Fig. 6. (continued).

Overall, the peaks in size are well in the past. In 1996 the Summer Olympics in Atlanta sold the highest number of tickets (8.3 million tickets), for the Winter Olympics it was Calgary in 1988 (1.6 million tickets) and for the FIFA World Cup it was the USA in 1994 with 3.6 million tickets. All three of these events were staged in North America, known for large stadium capacities, ease of travel among cities and large middle-class populations with disposable income and a preference for spending on spectator sports. As the prices of tickets have kept increasing, the peak points for ticketing revenue occurred after the peaks for spectators: at the 2012 Summer Olympics (which earned more than 1 billion USD₂₀₁₈), the 2010 Winter Olympics (almost 300 million USD₂₀₁₈) and the 2014 FIFA Men’s World Cup (558 million USD₂₀₁₈).

If we look at the combined graph, growth is more stable, as individual fluctuations are cancelled out: the 2012–2014 cohort marked the peak for the spectator dimension, with a strong drop for the 2016–2018 cohort. Considering the new reality of the Covid-19 pandemic, this dimension will continue to further decline, as the 2020 Tokyo Olympics was staged completely without fans (Moody 2021) and international fans were banned from the 2022 Beijing Winter Olympics (Al Jazeera 2021).

Marketing dimension: The marketing dimension, comprising broadcast and sponsorship income, has experienced the most dramatic jump in the last several decades (Fig. 6d). By the early 2000s, marketing income had grown by a staggering 351 times, compared to the first period. It then experienced two further jumps: at the end of the first decade of the 21st century and at the beginning of the 2010s, when it was almost 594 times higher than in the mid-1960s. The Olympic Games experienced the strongest growth in the 1980s which gradually continued in the next two decades, with a slowdown in the 2010s, whereas the World Cup experienced the strongest growth from the 2000s onwards. Fig. 6d also shows that sponsorship revenue has grown more strongly for the Winter Olympics than for the Summer Olympics.

The FIFA Men’s World Cup underwent the most pronounced increase in the marketing dimension in terms of the absolute values, while the Winter Olympics had overall the highest growth rate in this dimension. The income from broadcasting and sponsorship for the World Cups was relatively low until the mid-1990s, but then took off, increasing over five-fold between the World Cup 1998 in France and the World Cup 2002 in Japan/South Korea to reach over USD₂₀₁₈ 2 billion. This then more than doubled for the most recent edition of the World Cup staged in Russia in 2018.

Cost dimension: There has also been an upward trend for the cost dimension of the Olympic Games and the FIFA Men’s Football World Cups up until the early 2010s, with a stagnation since then (Fig. 6e). Much of this was growth driven by the continuous increase in organising costs, while venue costs fluctuated much more from one edition to the other. The Summer Olympics in London were the most expensive in organising cost at almost USD₂₀₁₈ 3.3 billion, while Rio 2016 were almost USD₂₀₁₈ 1 billion less costly. Salt Lake City 2002 holds the record as the most expensive Winter Olympics for organising costs, at USD₂₀₁₈ 2.6 billion, but outlays for organising the Winter Olympics have declined since then. Overall, organising costs appear to have peaked for all three events and are going down. This is particularly noticeable for the Olympic Games.

The cost of venues, by contrast, has varied much more from one edition to another. Venue costs were low in the 1960s and 1970s but have been continuously high since the 2000s, resulting from increasing demands from event owners placed on stadium capacity and stadium technology. High venue costs are more likely with hosts that do not have state-of-the-art venues (thus leading to high costs for renovation or new construction) or that place a high political priority on spending money on venues (whether for modernisation or to serve cronies).

The costliest event in the sample, venues and organisation combined, were the 2014 Winter Olympics in Sochi at USD₂₀₁₈ 15 billion, followed

by the 2012 Summer Olympics in London (USD₂₀₁₈ 11 billion), and the World Cup in Japan and South Korea in 2002 (USD₂₀₁₈ 7.2 billion) in third place. The graph suggests that costs are in general decreasing and, if it were not for the two events in London (2012) and Sochi (2014), the peak would have been reached already in the early 2000s. The most recent period (2016–2018) posted only the third highest costs of our sample.

5. Peak event

5.1. Three scenarios

The preceding analysis has shown that the Olympics and the World Cup have followed an S-shaped growth curve (see also Graphical Abstract), similar to [Butler's \(1980: 7\) Tourist Area Life Cycle \(TALC\) model](#) of the evolution of a tourism area. For the Olympic Games, growth in all dimensions of size has slowed significantly over the past few years and the event has started to shrink in several of its dimensions of size: the largest events are no longer the most recent ones. Thus, the largest Summer Olympics happened in London in 2012 and the largest Winter Olympics in Sochi in 2014. The World Cup, by contrast, appears to be on a somewhat delayed growth path compared to the Olympics: while growth has markedly slowed down, the most recent World Cup (Russia 2018) is still the largest one in our sample.

For both the Olympics and the World Cup, however, we either have reached, or are close to reaching, the top of the S-shaped curve, which we call peak event. Peak event presents a bifurcation point for the future evolution of these events, which is highly uncertain. We see three different possible scenarios. The first, the 'rebound scenario' is a decline and then a rebound in size. Several factors suggest a further decline: the COVID-19 pandemic already reduced the number of visitors and journalists and the ticketing revenue for Tokyo 2020 and Beijing 2022 (but it increased costs of organisation). Future hosts, such as Paris for 2024, Los Angeles for 2028 and the United States, Canada and Mexico for the World Cup 2026 have also taken measures to reduce the size and costs of these events. The global concern with climate change and new regulations to curb the human impact on earth will further restrict growth. Yet, in this scenario, as these measures show their effect, hosts and rights owners will be tempted to increase the size of the events once again, spurred on by competitive desire to outdo previous hosts and to increase revenues. Another potential development could be the transfer or sale of mega-event organising rights to private actors who would be more inclined to manage these events as income-generating ventures.

The second scenario – the 'decline scenario' – implies a rapid decline in size. In this scenario, the societal and events-related crisis factors discussed earlier combine to radically change the nature of mega-events as we know them. Potential hosts no longer bid for mega-events due to their excessive costs, uncertain economic and tourism impacts and poor sustainability record; more and more communities challenge their city governments due to overtourism concerns; fewer and fewer visitors travel to watch competitions in person in a carbon-constrained world where various green new deals imposed by national governments put limits on mega-event organizers' attempts to attract large numbers of tourists and local fans; people no longer watch events on pay TV that do not interest them and broadcast revenue starts to decline; and hosts put on 'bare bones' events at minimal cost.

In a third scenario, the current stage is just a plateau in a growth process set to resume in a few years. We would thus be taking a sort of breather before setting off again to reach even larger sizes. In that scenario, the events we have identified as the largest would not hold that record for long, before even larger events surpass them, and we would not be at peak event now. The attempt of FIFA to increase the frequency of the FIFA Men's World Cup can be considered as one sign in favour of this future. In this scenario, new countries might be willing to step up to hosting events with spectacular grandeur, while digitalisation allows tapping new audiences and marketing income. This third scenario is at

odds with the current crisis of modernity and with the efforts to reign in the growth of these events. But it might well come to pass. After all, continued growth is a recurring concern with mega-events and past efforts to curb growth have proven mostly unsuccessful. As Pierre de Coubertin wrote more than 100 years ago: 'we really have too many tournaments and above all, I daresay, too many championships. ... We see championships everywhere and they multiply ad infinitum'.

5.2. Policy and management implications

For cities and countries looking to host the Olympic Games or the World Cup, peak event opens new opportunities for bidding and hosting that need to be reflected in policies and management strategies. Hosting strategies have hitherto relied on a growth agenda (e.g. [Andranovich et al., 2001](#)), aiming to increase the size and offer of the urban infrastructure, the number of tourists, accommodation capacities, the available sports facilities and so on. Event policies have often been reactive, ad hoc and insular, lacking proper integration with larger policy priorities ([Whitford, 2009](#)). The reduction in size suggests the chance and need for new hosting models. These require policies that no longer emphasize large size and growth, but intelligent ways of making do with existing infrastructure and perhaps reducing or limiting investment and people flows to remain within local carrying capacities and avoid negative impacts on communities (cf. [Duignan et al., 2022](#); [Duignan & McGillivray 2019](#); [Müller et al., 2021](#); [Weaver et al., 2021](#)). For hosts concerned with overtourism, which is often the case for mega-events (e.g. [Duignan et al., 2022](#); [Schnitzer et al., 2020](#)), this shrinkage opens new possibilities of developing hosting strategies that are less dependent on maximising tourist numbers and tourist offer but could foreground sustainable tourist flows through focusing, for example, on the right season for hosting and on the type of countries participating in the event ([Fourie & Santana-Gallego, 2011](#)).

Crucially, the declining size of the Olympics and the World Cup could open the door for smaller cities and countries that propose a reduced size of these events or new hosting models, such as shared hosting with neighbouring cities or countries or more flexible temporalities. The IOC (and FIFA to a lesser degree) has started reform processes that give more flexibility to hosts and soften previously hard requirements around hosting. For tourism actors, this means that requirements regarding, for example, a minimum number of hotel rooms, a minimum throughput for the airport or minimum capacities for the sports venues are no longer set in stone. This change suggests an opportunity for more creative bids that break with previous growth logics and make use of the increased flexibility for putting hosts' agendas, local communities and concerns of sustainability first. In any case, the declining size suggests that cities face decreasing pressure to outbid each other by offering ever larger events and ancillary development schemes, which would come at ever greater cost to the public purse.

6. Conclusions

Hallmarks of modernity, mega-events have grown with modernity's global expansion and the emergence of mass tourism. In this paper we have, for the first time, traced that growth for the Summer and Winter Olympics and the Football World Cup across five dimensions and over more than five decades, by constructing a Mega-Event Growth Index. The average edition of these mega-events is now more than 60 times larger than fifty years ago, having grown thirteen times more quickly than world GDP. While these three events have grown in all dimensions, the more than 160-fold increase in marketing revenues and the almost 20-fold increase in costs (all adjusted for inflation) have far outpaced the growth in the sports, media and spectator dimensions. This differentiated increase in size underscores concerns about the commercialisation of these events and their excessive costs, both of which have overshadowed the sports competitions. The Summer Olympics, as the largest mega-event overall, have grown 25-fold over our period of study,

whereas the Winter Olympics (growing more than 100-fold) and the World Cup (ca. 50-fold) have had much steeper growth curves.

Despite this record of continuous past growth, we contend that we might have reached peak event – the point at which the size of mega-events starts to decline. Our data suggest that peak event for the Olympic Games occurred in the early to mid-2010s and that it may have occurred for Russia 2018 for the World Cup. Future hosts have declared a desire to reduce the size of these events, and the IOC and FIFA have initiated reforms to stem the decline in interest among potential event bidders. In principle, this is good news for prospective event hosts. It could turn mega-events, gradually, into more beneficial and more sustainable ventures for host populations and for the planet and therefore tie in with the growing call for degrowth in tourism (Fletcher et al., 2020). Peak event, then, also calls for new event bidding and management policies (see previous section), which could free cities from the implicit growth imperative that has dominated in past decades.

Three key contributions – one methodological, one empirical and one conceptual – to the literature on mega-events and tourism emerge. Methodologically, we develop a custom-built database and dedicated index to measure the size and growth of mega-events as multidimensional phenomena that incorporate content (sports, culture etc.), tourism, media and economic aspects of costs and benefits. As such, we build on and improve previous attempts at measuring size and growth (e.g. Chappelet 2014; Fett 2020) by proposing a more multifaceted model. This growth index provides a nuanced analysis of growth over time and of its divergent trajectories in different dimensions and events, allowing a more differentiated appreciation of the varied growth of mega-events in different aspects.

Empirically, we present a dataset with unprecedented historical depth, covering more than five decades, and significant breadth, covering the largest mega-events in the world. Such systematic ex-post data are rare and matter in a context where ex-ante data are often biased and unrealistic, thus skewing decision-making in favour of bidding (see Baade & Matheson, 2016; Zimbalist, 2015). This coverage allows us to identify long-term trends that emerge over decades and guard against conclusions based on the analysis of just a few events. That the growth of the Olympics and the World Cup has slowed down or even reversed is a novel finding that goes against the dominant assumption of the continued growth of these events (e.g. Boykoff 2014; Chappelet 2014).

As a conceptual contribution, we diagnose a potential rupture in the growth logic of higher, faster, stronger that dominated the Olympic Games and the World Cups over the past decades. As such, the frequent assumption, often implicit, of the continued growth of the Olympics and the World Cup needs to be re-examined. While outbidding competitors and building ever grander infrastructure was the dominant mode of winning the right to host in the past, the arrival of peak event suggests that the Olympics and the World Cups might be becoming more amenable to questions of degrowth and challenges of sustainability in urban development, tourism and beyond (Duignan & McGillivray, 2019; Fletcher et al., 2020; Weaver et al., 2021).

Peak event, however, is above all bifurcation point and the future remains highly uncertain. In the rebound scenario, the Olympics and the World Cup adapt and transform their business model. This might include expanding the digital component; spreading one edition of the event among several hosts, thus diminishing the number of tourists visiting these events and lowering the costs for venues; and reducing the size of national delegations and journalists in physical attendance. In the decline scenario, the Olympics and the World Cup fail to implement substantial changes and continue business as usual. This scenario will see them enter a period of rapid decline: interest to host these events will fade even further among cities and countries, fewer and fewer visitors will come to see the games in person, which will result in the loss of attraction as a branding tool, and remote audiences will turn to other entertainment. This decline could spell the end of the Olympics and the World Cup as we know them. It would not be for the first time. The

ancient Olympic Games also petered out, in the fourth century AD, because cities and sponsors lost interest in funding them (Remijsen 2015). History may, after all, repeat itself.

Data

The data of this manuscript is available in open access in the Harvard dataverse (see Müller et al., 2022 in 'Further Reading' section below).

Author contributions

MM designed the research, developed the idea and wrote the manuscript. MM and DG analyzed the data. MM, SDW, CG, MH, AL developed the database. MM, SDW, DG, MH, AL collected and assembled the data.

Impact statement

Our analysis offers insight into the growth of mega-events, which – in the context of gigantism – is often cited as the major challenge for the future of these events. We find that these events have begun diminishing in size (for the Olympic Games) or that growth has at least been slowing down (for the Football World Cup). The unprecedented breadth and historical depth of our dataset provides tourism and destination managers and policy-makers with a more realistic estimation of tourism-related and other benefits, and forms the basis for a systematic cost-benefit analysis. The shrinkage of the Olympics and the World Cups signals a potential departure from the dominant growth logic and calls for new, more sustainable models of hosting these events, for example by reducing the size, thus encouraging smaller hosts, by sharing and reusing infrastructure, and by responding more to community concerns.

Declaration of Competing Interest

None

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