# The Spatiotemporal Dynamics of Cultural Events on Eventbrite

Yue Wang[1,*], Andrea Ballatore[1] and Matteo Montecchi[2]

[1]Cultural Geo-Analytics Lab, Department of Digital Humanities, King's College London
[2]King's Business School, King's College London

## Summary

This study explores the spatial and temporal heterogeneity of cultural life by investigating the dynamics of cultural events in Greater London. We leverage over 50,000 data points retrieved from Eventbrite to analyse the distribution of events at a highly granular level. The events show a clear centre-periphery pattern with higher density on weekday evenings and weekends and a strong categorical variation, visualised through hourly and daily heatmaps. This uneven distribution shapes the participation opportunities of citizens for urban cultural events, calling for more research into the contextual factors that influence event creation and participation patterns in the cultural sector.

**KEYWORDS:** Cultural events, event dynamics, event data, Eventbrite, Greater London

## 1 Introduction

Cultural events can be defined as activities that promote and deliver intellectual, spiritual, and aesthetic development, showcase a particular way of life, or highlight intellectual and artistic endeavours (Williams, 1977; Bennett, Grossberg and Morris, 2013; Dittmer and Bos, 2019). The significance of cultural events has been highlighted in relation to individual well-being (UNESCO, 2021) and urban quality (Jacobs, 1961). Understanding spatiotemporal distribution is essential to reveal the role of cultural events in promoting societal well-being, shaping urban rhythms and offering equitable opportunities for cultural participation in everyday life (Lefebvre, 2004). However, due to the challenges in obtaining detailed temporal and location data at the event level, as well as the lack of unified events data that shape cultural life (Black *et al.*, 2023), the spatiotemporal dynamics of cultural events remain largely unexplored. Existing studies on the spatial distribution of cultural infrastructure (Ballatore and Candlin, 2023) and cultural participation (Feder *et al.*, 2023) have primarily focused on national and urban scales. To this end, ticketing platforms have emerged as valuable data sources with detailed location and temporal data. Despite the biases in the pool of event providers leading to heterogeneous and incomplete event data, it offers a unique opportunity to capture the spatiotemporal distribution of cultural events and uncover spatial inequalities that limit access to cultural life.

Against this background, this study sets out to analyse the fine-scale spatial and temporal distribution of cultural events in London by regularly collecting event data from Eventbrite, a prominent ticketing platform, and classifying events with a consistent approach to ensure suitable data coverage and reliability. Our events data spans a full year, capturing all publicly accessible events available at the time of each monthly collection, except those with expired, cancelled, or removed entries, constructing a

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robust dataset for future analysis. Leveraging data on over 50,000 cultural events with start dates between March 1, 2024, and February 28, 2025, in Greater London, this study addresses two research questions: (a) What is the spatiotemporal distribution of cultural events? (b) How do event categories differ in their spatiotemporal patterns? The findings reveal significant spatial inequalities in access to cultural events, with a few hotspots in outer London, and considerable differences in temporal patterns across event categories. These insights contribute to understanding the dynamics of cultural events with marketplace data and highlight the need for further research on the contextual factors driving this uneven distribution and category-based variations.

## 2 Data sources

Eventbrite is a ticketing platform where customers can book events, such as performances and tours. This study collected events data monthly through ethical web scraping. Attributes of this dataset include the event title, tags, venue, location, datetime, duration, and organiser. We focused on cultural events within the geographical area of Greater London, filtered by tags aligned with the Culture and Creative sectors (DCMS, 2023). A total of 53,641 events were classified into 18 categories corresponding to cultural service subsectors (DCMS, 2023), namely, *performing arts, lifestyle, visual arts, music, tourism, fashion, spirituality, film, community, sport, education, craft, charity, technology, literature, library and archive, science,* and *museum and gallery.* Contextual data include London boroughs and their demographic data from the Greater London Authority (2022), containing the Official Ordnance Survey polygons of boroughs and population data from the Census 2021(ONS, 2021).

## 3 Spatiotemporal distributions of cultural events

To uncover meaningful spatiotemporal dynamics, the spatial distribution of cultural events is visualised on a one-square-kilometre grid (Figure 1a) and the per capita density is calculated at the borough level (Figure 1b). As expected, central London exhibits the highest density of cultural events, particularly in the City of London. A general centre-periphery pattern emerges, confirming the strong agglomeration of cultural activities in central areas. However, several peripheral clusters are also identified (Figure 1a), although their contribution to per capita event density remains small (Figure 1b), highlighting significantly uneven opportunities for cultural engagement in this extended urban space.
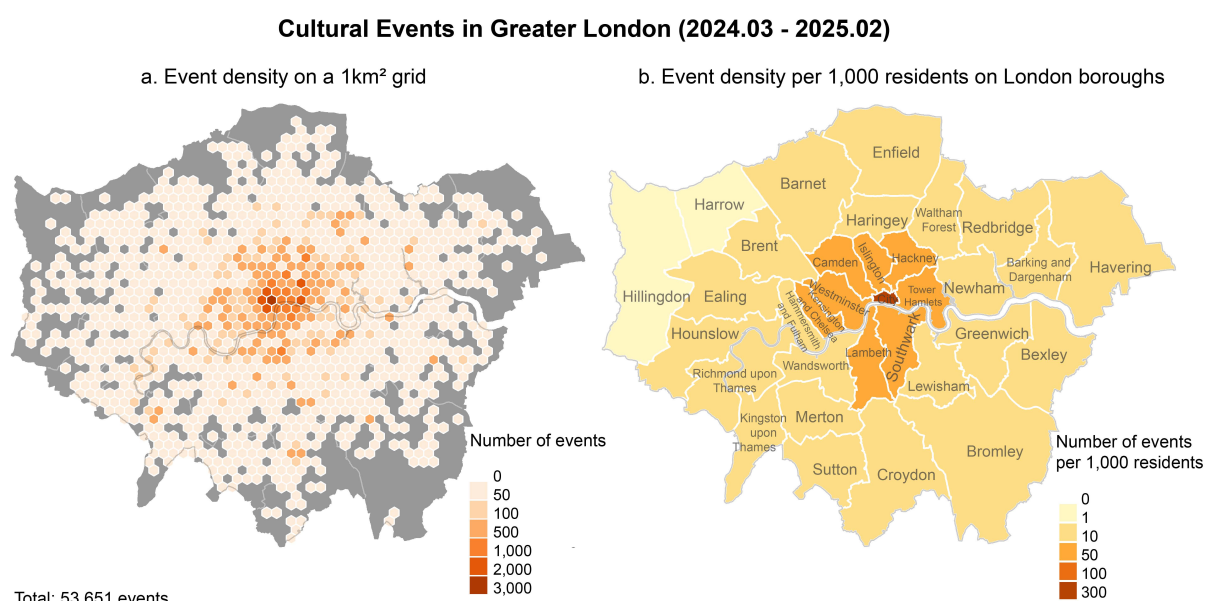
**Cultural Events in Greater London (2024.03 - 2025.02)**



**Figure 1** The density of cultural events in Greater London by 1-sqkm grid (a) and the average number per 1,000 residents by borough (b). Data source: Eventbrite.

Hourly and day-of-week heatmaps reveal remarkably clustered temporal patterns. Cultural events are predominantly concentrated on weekends, as expected for leisure activities (Figure 2). The density of events varied significantly between weekdays and weekends. From Monday to Thursday, events peak only during the evening hours, between 6 PM and 8 PM. Fridays saw a higher density of events, extending from 6 PM to midnight. Saturdays had the most events over a week, with peak events spanning from 10 AM to midnight. With fewer events than Saturdays, Sundays held a relatively high number of events, evenly distributed from 11 AM to midnight.
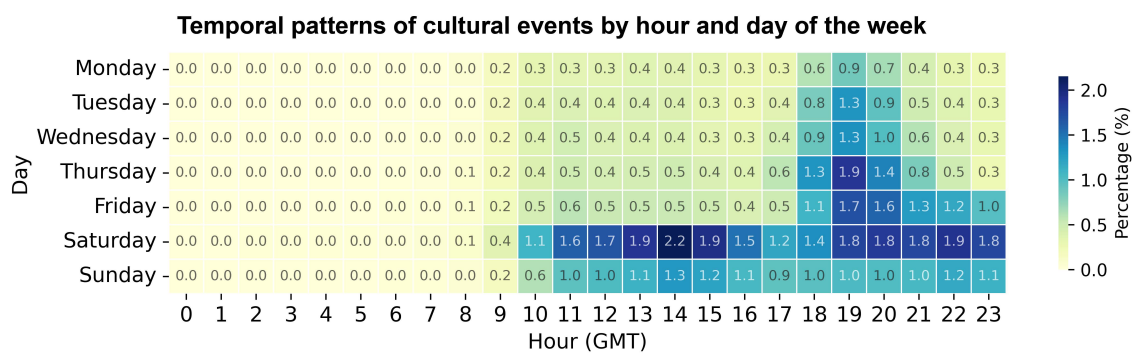


**Figure 2** Percentage of cultural events by hour and day. The calculation includes the full duration of each event, accounting for multi-hour or multi-day events in all relevant time segments. The percentage of events is calculated by row (day) and column (hour). Data source: Eventbrite.
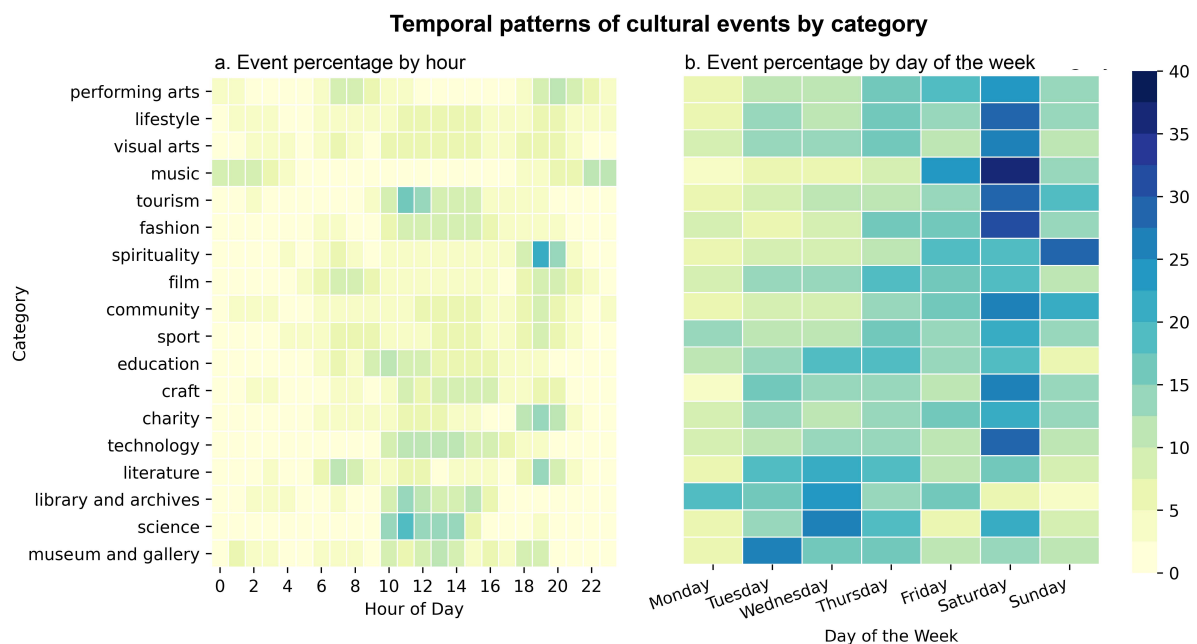


**Figure 3** Categorical differences in temporal patterns of cultural events by hour (a) and by day (b). The percentages of events are calculated by row (category). The calculation includes the full duration of each event, accounting for multi-hour or multi-day events in all relevant time segments. Data source: Eventbrite.

Among the 18 categories, the dataset contains predominantly events classified as *performing arts* (24%), *lifestyle* (21%), and *visual arts* (15%), reflecting the platform's remit and usage. The categorical differences in temporal pattern underscore the need for multiple data sources to mitigate possible thematic biases. As part of our ongoing work, we are incorporating additional platforms, such as Skiddle[2] , a ticketing platform for pub events, and London Theatre[3] , a ticketing platform for West-end theatre events, to achieve broader coverage.

The 24-hour heatmap by category (Figure 3. a) reveals a concentration of cultural events during noon and evening hours. Consistent with venue opening hours, categories including *science*, *technology*, *tourism*, *craft*, *education*, *library and archives*, and *fashion*, predominantly occur during the daytime (9 AM to 5 PM). In contrast, categories concentrated in the evening, such as *spirituality*, *charity*, *film*, *literature*, *music*, and *performing arts*, align with people's leisure time. The *film* category exhibits a notable peak at 8 AM as a significant portion of this category comprises film fairs and festival events starting in the morning. Lastly, categories such as *lifestyle*, *sport*, *community*, and *visual arts* show fluctuating density and multiple peaks over the day. These patterns are consistent with activities that are primarily arranged around individuals' schedules and require access to flexible services.

There are significant differences in cultural event density between weekdays and weekends across categories (Figure 3. b). Firstly, most categories are concentrated on weekends. Categories that peak on Saturdays include *tourism*, *performing arts*, *music*, *visual arts*, *technology*, *lifestyle*, *charity*, *craft*, *community*, *fashion*, and *sport*. The peak time of *spirituality* on Sundays is likely to be linked to religious practices. Secondly, *library and archives* are the only category with more events on weekdays. Thirdly, categories with fluctuations in density throughout the week, such as *film*, *literature*, *science*, *education*, and *museum and gallery*, reflect their deeper integrations into individuals' daily routines.

## 4 Conclusions and future work

This study uncovers the spatiotemporal dynamics of cultural events with fine-scale event data from Eventbrite. Our findings highlight the spatial heterogeneity of cultural events, peak hours and days during weekday evenings and weekends, and categorical variations in temporal patterns. This study enhances our understanding of cultural event dynamics by highlighting unequal opportunities for cultural life, a centre-periphery pattern mitigated by outer London hotspots, and the importance of categorical comparison into temporal patterns. Furthermore, this research demonstrates the potential of ticketing data for fine-scale analysis of cultural events, enables in-depth exploration of event-level location, timing, and categorisation, and indicates the applicability to different urban contexts where event marketplaces exist.

While these findings are promising, as with most social science research, this work has several limitations that can inspire future research directions. First, the results can be affected by thematic and spatial skews of events across ticketing platforms and a lack of information about venue capacity. To better capture categorical variations and mitigate data bias, future research should leverage the combination of events data from multiple categories and platforms. Second, as central London venues,

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[2]  https://www.skiddle.com/

[3]  https://www.londontheatre.co.uk/

such as the British Museum, attract both local people and national or international visitors, future research could classify venues in terms of visitors' heterogeneity, incorporate accessibility measurements and analyse venue service areas, with a focus on the role of transit stations in facilitating connections to these cultural hubs. Third, cultural events' thematic and cultural diversity is a valuable dimension that could be further operationalised to capture unexpected spatial-temporal patterns. Finally, integrating socioeconomic data from local authorities could enable further exploration of the contextual factors influencing the geography of cultural events.

## Biographies

Yue Wang is a PhD candidate at the Cultural Geo-Analytics Lab, Department of Digital Humanities, King's College London. She holds a master's in Urban Spatial Science from UCL. Her research focuses on the spatiotemporal dynamics of cultural events and the application of AI in multimodal data analysis.

Andrea Ballatore directs the Cultural Geo-Analytics Lab and is a Senior Lecturer in Cultural Data Science at the Department of Digital Humanities at King's College London. His lab's research focuses on geo-analytics for the cultural sector, digital geographies, and the spatial humanities.

Matteo Montecchi is an Associate Professor in Marketing at King's Business School, King's College London. His research primarily explores consumer behaviour in digital environments, including AI-driven marketing transformation, and the intersection of marketing with diversity, corporate responsibility, and brand transparency.

## References
Ballatore, A. and Candlin, F. (2023) 'A geography of UK museums', *Transactions of the Institute of British Geographers*, 48(1), pp. 213–229. Available at: https://doi.org/10.1111/tran.12578.

Bennett, T., Grossberg, L. and Morris, M. (2013) *New Keywords: A Revised Vocabulary of Culture and Society*. John Wiley & Sons.

Black, S.R. *et al.* (2023) 'Cultural analytics in the UK: events data potential for the creative and cultural industries', *Cultural Trends*, 33(5), pp. 680–695. Available at: https://doi.org/10.1080/09548963.2023.2263378.

DCMS (2023) *DCMS Sector Economic Estimates: Employment July 2021 - June 2022, GOV.UK*. Available at: https://www.gov.uk/government/statistics/dcms-sector-economic-estimates-employment-july-2021-june-2022 (Accessed: 2 February 2023).

Dittmer, J. and Bos, D. (2019) *Popular Culture, Geopolitics, and Identity*. Rowman & Littlefield.

Feder, T. *et al.* (2023) 'Cultural consumption and Covid-19: evidence from the Taking Part and COVID-19 Cultural Participation Monitor surveys', in *Lockdown Leisure*. Routledge.

Jacobs, J. (1961) *The death and life of great American cities*.

Lefebvre, H. (2004) *Rhythmanalysis: Space, time and everyday life.* Bloomsbury Publishing.

ONS (2021) 'Population profiles for local authorities in England'. Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestim

ates/articles/populationprofilesforlocalauthoritiesinengland/2020-12-14 (Accessed: 26 January 2025).

Ordnance Survey (2022) 'London Boroughs - London Datastore'. Available at: https://data.london.gov.uk/dataset/london_boroughs (Accessed: 21 January 2025).

UNESCO (2021) *Cultural and creative industries in the face of COVID-19*. Available at: https://unesdoc.unesco.org/ark:/48223/pf0000377863 (Accessed: 19 March 2023).

Williams, R. (1977) 'Keywords: A Vocabulary of Culture and Society', *Science and Society*, 41(2), pp. 221–224.