

Economic Impact of Eurovision Song Contest in Liverpool

2nd Report: Year-On Assessment (Final)




LIVERPOOL
CITY REGION
COMBINED AUTHORITY

Liverpool City Region Combined Authority

Eurovision Economic Impact Assessment

Year-On Assessment

January 2025

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Section 1

Introduction

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C O N S U L T I N G

1 Introduction

1.1 Overview

AMION Consulting ('AMION') was appointed in April 2023 by Liverpool City Region Combined Authority (LCRCA) to evaluate the impacts of Eurovision 2023¹ held in Liverpool in May. AMION worked with Spirul, a leading primary data research company, to undertake this assessment.

From the 5th to the 13th of May 2023, Liverpool hosted the Eurovision Song Contest, featuring semi-finals on the 9th and 11th of May, and the grand final on the 13th of May. The event was broadcast live on BBC One and BBC Radio 2, reaching an audience of 162 million viewers across Europe and around the world.

The commission formed a two-part series as follows:

- The first report was published in [Autumn 2023](#) which focused on the short-term impacts, analysing the immediate effects of hosting the event.
- This document is the second report, which presents a longer-term assessment of the economic impacts of Eurovision 2023, one year after².

This year-on report aims to assess the **longer-term and enduring impacts of Eurovision 2023**. As well as the long-lasting sectoral, volunteers, and community impacts, this stage of work considers the economic impacts associated with increased levels of tourism and investment post Eurovision 2023.

1.2 Findings of first report

The immediate economic impact of Eurovision 2023 was outlined in our report last year, which calculated the event attracted **473,000 attendees to Eurovision events in Liverpool**. Accounting for people attending more than one event and the inclusion of visitors who did not attend an event but the main purpose of their visit to Liverpool was Eurovision, a total of some **306,000 individuals visited Liverpool city centre** due to Eurovision.

The net additional impacts quantified as part of the economic impact assessment are presented in **Table 1.1** at each spatial level. The **total net additional expenditure at a Liverpool City Region was calculated to be £54.8m**, supporting 611 one-year FTE jobs and GVA of £24.4m in 2023.

¹ Within this report, 'Eurovision 2023' refers to the Eurovision event in Liverpool this year being evaluated by this study

² This report was submitted in October 2024. Minor amendments have been made as part of this final version in January 2025.

Table 1.1: Net additional impacts from Eurovision 2023 for Liverpool, LCR, and North West

	Liverpool	LCR	North West
Visitor expenditure impacts			
Visitor expenditure	£42,342,062	£43,031,456	£45,327,797
1-year FTE employment	425	432	455
GVA	£16,103,454	£16,365,643	£17,238,983
Organiser expenditure impacts			
Organiser expenditure	£10,925,146	£11,728,533	£15,903,244
1-year FTE employment	164	179	243
GVA	£7,399,325	£8,079,978	£12,122,747
Total expenditure impacts			
Total expenditure	£53,267,208	£54,759,989	£61,231,041
1-year FTE employment	589	611	698
GVA	£23,502,779	£24,445,621	£29,361,730

1.3 Purpose and approach for this assessment

This assessment was based on a comprehensive primary research plan including a visitor survey with over 3,000 respondents. Due to the time lag in data publications, these findings can now be reviewed against secondary data sources from the Office for National Statistics, STEAM, and other industry publications.

Additionally, Eurovision's presence in Liverpool is expected to leave a lasting impact on the city, representing another major event which shapes the views of Liverpool in terms of international profile, community pride, promotion of inclusivity, nurturing local music talent, and ability to host future events. Our findings from the first report supported many of these conclusions, however, additional analysis is required to judge the lasting impact of these effects.

Based on this, there are two clear aims for this assessment:

- i) A review of our immediate impact assessment against latest data sources;
- ii) An assessment of the long-lasting tourism, expenditure, business, community and image impacts of Eurovision 2023

To achieve this, a series of additional analyses has informed this second report including:

- a comprehensive **secondary data review** of Office for National Statistics, STEAM, Visit Britain, and industry publications. This methodology was designed to test our initial findings against the latest available information, recognising the time lag with regards to socio-economic data;
- **econometric approaches such as the Travel Cost Method to add additional analysis to the economic impact.** This method allows us to gain a deeper understanding of attendees' spending habits, their willingness to travel, and the broader economic benefits generated by their participation;

- additional **business surveys** to gain a more in-depth insight into the direct impact of Eurovision on local businesses. By collecting Likert scale responses on the event's contribution to their business opportunities, growth, and partnerships, the long-term impacts can now be better understood;
- a **legacy survey** with visitors and other groups has captured valuable feedback regarding the enduring impact of the event, including any lasting changes in perceptions, sustained engagement, and ongoing benefits;
- AMION and Spirul have undertaken **follow-up surveys with the volunteers** who actively contributed to the Eurovision event. By gathering insights into their experiences, acquired skills, and perceptions of the event's influence on the community, we can better assess the event's longer term social and cultural ramifications;
- further **follow up cohort studies by Department for Work and Pensions (DWP) with job seekers** that were seeking employment prior to Eurovision and those who secured jobs during the event's planning and execution. This study has helped us explore whether the event played a role in creating additional job opportunities and positively influencing the local labour market;
- we have conducted focused **follow-up discussions with key stakeholders**, including hoteliers and cultural organisations. These conversations have provided valuable insights into how Eurovision impacted their operations, occupancy rates, revenue, and long-term strategies, giving us a comprehensive view of the event's influence; and
- close collaboration with the LCRCA and key deliver partners such as Liverpool City Council (LCC) has enabled us to **share the lessons learned** from the research. Through these insights, recommendations, and findings, we aim to contribute valuable knowledge to inform the work of the new Liverpool City Region Visitor Economy Partnership (LVEP), future event planning, economic development strategies, and community engagement efforts.

The additional primary research undertaken as part of this year-on assessment is presented below.

Table 1.2: Data collection summary		
Stakeholder group	Date	Methodology
Cohort survey	December 2023	Promoted online survey
Volunteers	December 2023 - May 2024	Promoted online survey
Live Show Attendees and visitor survey respondents ³	May 2024	Promoted online survey
LCR Culture Network ⁴	July-August 2024	Promoted online survey
Liverpool Music Board Legacy Group	August 2024	Online workshop
Liverpool One	August 2024	Telephone interview

³ Out of the 3,000 respondents to the first visitor survey in 2023, 856 stated that they were happy to be contacted by email to undertake the follow-up survey a year after the event. The follow-up survey was sent to 856 respondents however, 190 bounced back due to an error in the email address or now inactive email addresses. From this, we received nearly 100 responses to form the basis of our year-on impact assessment in terms of visitors, expenditure, and jobs.

⁴ The LCR Culture Network involves key stakeholders from the Liverpool Arts Regeneration Consortium (10 largest cultural organisations in the city including Tate, Liverpool Philharmonic, and National Museums Liverpool) and the Creative Organisations of Liverpool (over 60 small and medium cultural and community arts organisations)

Table 1.2: Data collection summary		
Stakeholder group	Date	Methodology
Liverpool ACC	August 2024	Telephone interview
LCRCA Growth Platform	August 2024	Telephone interview
Liverpool BID Company	August 2024	Telephone interview
Liverpool Hospitality Association	August 2024	Telephone interview
Liverpool City Council	September/October 2024	Telephone interview

1.4 Report structure

The report is structured as follows:

- **Section 2 Eurovision 2023 Context:** A summary of the Eurovision 2023 activities has been presented as well as the socio-economic context at the time of the event and potential year-on impacts;
- **Section 3 Impact Assessment:** A review of the immediate impacts has been undertaken utilising the latest secondary data sources, as well as a core assessment of the enduring tourism, expenditure, business, community and image impacts;
- **Section 4 Travel Cost Method for Economic Valuation:** A robust revealed preference assessment has been undertaken based on the amount of time and money spent by attendees to travel to Eurovision 2023 in order to calculate the cultural value attendees placed on attending the event;
- **Section 5 Conclusions:** A summary of the key findings is presented alongside several recommendations to maximise the legacy impacts based on the lessons learned from our research

Section 2

Context

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2 Eurovision 2023 Context

2.1 Summary of Eurovision 2023

From the 5th to the 13th of May 2023, Liverpool hosted the Eurovision Song Contest. Eurovision 2023 events in Liverpool started with the opening of Eurovision Village on 5th May. The opening ceremony took place on 7th May, before the semi-final Live Shows were held on the 9th and 11th of May and the Grand Final Live Show on 13th May at the M&S Arena.

The event was broadcast live on BBC One and BBC Radio 2 with Eurovision 2023 content on BBC Television in the week leading up to the final reaching 27 million people. The theme of Eurovision 2023 was "Building Bridges." This reflected the context of Liverpool hosting on behalf of Ukraine, Liverpool's history as a place of immigration and diversity, and Eurovision Song Contest's role as a platform for bringing people together from all over Europe.

The key locations for Eurovision during the two-week delivery period in 2023 included the following:

- **The M&S Bank Arena was the main event zone for the Live Shows**, consisting of two Semi-Finals and a Final. Each Live Show also had two rehearsals. Therefore, there were nine ticketed events at the M&S Arena between 9th and 13th May.
- **The Eurovision Village was located on the Pier Head** – a 10,000 capacity space outside the three Graces on the Liverpool Waterfront. The Eurovision Village was delivered as a co-production between Liverpool BID and Culture Liverpool. The Eurovision Village was open for 10 days from 5th May to 13th May across the Eurovision 2023 programme, including ticketed events for the Eurovision Opening Party and the Grand Final Party.
- **The Big Eurovision Welcome was held at St George's Hall** – an iconic city centre venue. Live performances and several cultural commissions supported the unique nature of the event. This event was an opportunity to showcase the ambitions of Eurovision 2023 in Liverpool as well as mark their relationship with Ukraine.
- **Camp & Furnace (C&F) hosted the official Euro Fan Club**. The importance of having a great nightclub at the heart of the offer for fans was strongly identified as a key success factor in the consultation with Eurovision fan groups prior to the hosting of Eurovision 2023. This club is located in the Baltic Triangle, which is a 5-minute walk from the main arena and 20-minute walk from Eurovision Village.
- A number of other events were held across the city such as exhibitions, watch parties, and cabarets. **EuroStreet** was specially curated in collaboration with many partners across the LCR to provide a unique opportunity for communities across the region to get involved, take part, deliver events, and celebrate all things Eurovision. Aimed at Early Years, Primary, Secondary and Special Education settings, **EuroLearn** offered a varied programme for schools to engage with and educational resources that were flexible enough also to be used in holiday activity and after-school clubs.

A summary of Eurovision 2023 events and locations are provided in **Table 2.1**.

Table 2.1: Eurovision 2023 Programme of Events

Event Type	Date/s	Location	Delivery partner
Live Shows	9 – 13 May	Liverpool Arena	ACC Liverpool
Eurovision Village	5 – 13 May	Pier Head	Liverpool BID and Culture Liverpool
National Lottery Big Eurovision Welcome	7 May	St George's Hall	National Lottery / Culture Liverpool
EuroFestival Events	1 – 14 May	Various inc. Tate Liverpool, Liverpool Cathedral, National Museums Liverpool, Blue and Yellow Submarine Parade	Culture Liverpool and Liverpool Arts Community
EuroLearn	5 – 13 May	Various schools	Culture Liverpool
EuroStreet	5 – 13 May	Various community groups	Culture Liverpool
General City-Wide Activities including EuroCamp	5 – 13 May	City Centre and venues hosting Eurovision activities	Various including Liverpool Arts Community and Liverpool

Liverpool hosting Eurovision 2023 built upon its rich history of hosting major events. Key previous events include the visit of Giants to the city and Liverpool's year as European Capital of Culture. The city has demonstrated its capacity to manage and facilitate large-scale gatherings, further solidifying its reputation as a capable and welcoming tourism destination. Moreover, Liverpool's strong association with music has been well-documented and celebrated. The city was officially designated a **UNESCO City of Music in 2015** in recognition of its profound musical heritage and its ongoing contributions to the world of music.

2.2 Key Eurovision stakeholders

The Host City's Governance consisted of representatives from the following organisations:

- **Safety Advisory Group (SAG):** All relevant city partners who meet on a fortnightly basis to discuss major event activity within the city
- **Joint Agency Group (JAG):** All emergency services from the city whose nominated representatives are the official 'sign off' for major event activity within the city including Merseyside Police.
- **Merseytravel:** The strategic and delivery arm for transport of the LCRCA, including responsibility for public transport.
- **Liverpool Visitor Economy Network (LVEN):** All attractions and organisations related to tourism.
- **Liverpool Music Board:** Independent board representing the music sector.
- **Public Health Team** responsible for the city's health and wellbeing services.
- **Liverpool City Region Combined Authority** supporting strategic delivery, communications and impact.

- **Ukrainian Groups:** A representative from the Association of Ukrainians in GB based in Liverpool to engage the local and refugee community.
- **Liverpool Arts Regeneration Consortium (LARC):** The 10 largest cultural organisations in the city including Tate, Liverpool Philharmonic, National Museums Liverpool.
- **Creative Organisations Of Liverpool (COOL):** Over 60 medium and small cultural and community arts organisations.
- **Liverpool Hospitality Association (LHA):** The body which represents hotels, restaurants and the entire city hospitality sector
- **Liverpool BID:** City Centre Business Improvement organisation
- **Liverpool ONE:** City centre retail area owned by Grosvenor.
- **City of Children Schools Team:** A team within the local authority dedicated to creating engagement opportunities and tangible legacy projects for schools from major event activity.
- Transport bodies including **Department for Transport and Network Rail.**

2.3 UK socio-economic overview

The aftermath of Brexit brought to the forefront a sense of division and uncertainty across Europe. As the United Kingdom navigated its exit from the European Union, the intricacies of economic and political disentanglement came into play. Amidst these changes, Eurovision's role as a cultural and political bridge became particularly noteworthy.

Historically known as a major port city with deep international connections, Liverpool's identity as a melting pot of cultures and ideas resonates strongly with the ideals of unity and diversity that Eurovision stands for. The city's rich musical heritage and its ability to embrace various genres and cultures made it a fitting host for an event that celebrates the harmonious blending of artistic expressions from different corners of Europe. Our immediate assessment concluded that **Eurovision 2023's promotion of inclusivity created an atmosphere of acceptance, drawing diverse audiences and providing a welcoming platform for artists from various backgrounds.**

It should be noted that the socio-economic context in the UK during 2023 and 2024 presented challenges for potential enduring economic impacts from Eurovision, for example:

- **Covid-19 pandemic:** The global Covid-19 pandemic in 2020/21 brought about unprecedented challenges for the events and the hospitality sector worldwide. Hosting the event post-pandemic brought significant tourism and global exposure, helping to revive Liverpool's hospitality, entertainment, and cultural sectors, which were hit hard by lockdowns. However, it should be noted that hospitality businesses and smaller creative organisations are still feeling the effects from the pandemic in terms of their ability to make new investments.
- **Cost of living crisis:** The country is experiencing significant economic as well as global uncertainties. There has been high inflation and a cost-of-living crisis in the UK caused by political disruption and international factors such as the ongoing war in Ukraine. This crisis

has posed challenges for urban centres including the hospitality sector specifically, as residents lack the disposable income to spend on leisure activities and overnights-trips. A general election in 2024 has also brought uncertainty, with public and private investment being delayed in order to understand the political landscape in the country. These factors created a difficult environment for the city to deliver substantial legacy impacts from Eurovision.

- **UK Riots in 2024:** The 2024 UK riots, triggered by a mass stabbing in Southport, disrupted efforts toward community cohesion in cities like Liverpool, which had hosted Eurovision 2023. The far-right protests contrasted sharply with the unity and diversity celebrated during Eurovision. The riots deepened divisions in the summer of 2024 and may make it harder for partners to sustain the positive social unity impact. Stakeholder engagement noted footfall dipped in Autumn 2024 immediately after the riots however, it remains to be seen whether this will influence the legacy impacts long-term. There are several short-term legacy impacts that have been analysed during our research that were not affected by the riots.

This national context needs to be considered as part of the assessment of long-lasting economic impacts from Eurovision 2023.

Section 3

Impact Assessment

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3 Impact assessment

3.1 Introduction

This section presents an analysis of the economic impacts of Eurovision 2023, with a primary focus on the LCR level. The assessment will examine the immediate impact assessment from our first report against the latest national and regional data sources. A robust assessment of enduring impacts will also be presented based on our bespoke primary research approaches. The assessment will focus on the following:

- Tourism and expenditure;
- Key business sectors (music, culture, hospitality)
- Community; and
- Image

3.2 Tourism and expenditure

3.2.1 Review of immediate impacts

Our first assessment found that the **total net additional expenditure at a Liverpool City Region was £54.8m, supporting 611 one-year FTE jobs and GVA of £24.4m in 2023**. Our assessment has subsequently been supported by several industry-leading research papers such as the Heseltine Institute for Public Policy, Practice, and Place report on Eurovision’s Economic Impact utilising Mastercard data⁵.

This report stated that their analysis *“supports AMION’s initial findings, demonstrating that Liverpool City Region (LCR) benefitted financially by delivering an extensive range of Eurovision related activities”*. Additionally, their *“quantitative, data-driven approach to explore changing consumer behaviour during Eurovision 2023, supports most of the findings of Amion’s mixed methods economic impact report (2023). Essentially, the economic uplift seen during Eurovision in May 2023 was driven by an increase in UK-based visitors to the city region, and an increase in average spending in eateries and bars”*. These conclusions supported our research that Eurovision provided an immediate boost to the LCR economy through increased tourism and spending.

This research, however, concluded that the beneficiaries were densely concentrated around the key sites of Eurovision activity. This finding has been identified within our recent stakeholder engagement, whereby city centre hotels experienced an uptick in occupancy and achieved rents however, some hoteliers on the outskirts of the city felt that their business did not see any benefit, despite being told of the potential impacts prior to the event. It does appear that the initial benefits were highly localized, particularly focused around the waterfront in Liverpool.

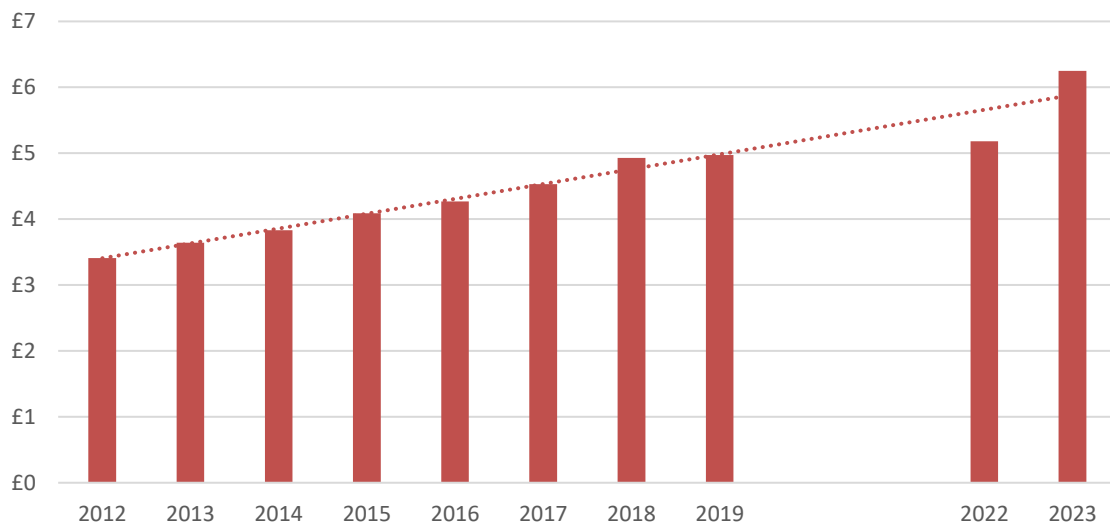
⁵ University of Liverpool – Heseltine Institute for Public Policy, Practice and Place, (2024); Eurovision’s Economic Impact in Liverpool: Insights for future large-scale events

The immediate economic assessment at a LCR level is also supported by latest tourism statistics⁶. **Figure 3-1** demonstrates the visitor expenditure in the LCRCA since 2012, with the two Covid-19 years of 2020 and 2021 excluded from the analysis. As can be seen from the trend line, the visitor expenditure in 2023 greatly exceeds expectations based on the tourism performance over the last 10 years. Based on trends, visitor expenditure in the LCR was expected to be £5.63bn in 2023. The actual visitor spend across the city region in 2023 reached £6.25bn, **around £600 million above the projected expenditure level for the year.**

Eurovision 2023 is likely to have played a key role in this spike, supported by our analysis that the two-week event itself contributed an additional £54.8m alone. It should be noted that there were other key events across the region in 2023 including the Golf British Open at Royal Hoylake in July however, the same boost to the visitor economy was not apparent the last time the Open was hosted at Royal Hoylake in 2014 which provides some weight to Eurovision’s contribution.

The other year which performed above the trendline was 2018, marking the 10th anniversary of Liverpool being named European City of Culture in 2008, which helped to sustain its reputation as a vibrant cultural destination. There were several major events this year including the final visit of the Giants and some major concerts including The Rolling Stones, Paul McCartney and Beyonce and Jay-Z. The performances of 2018 and 2023 within key visitor economy metrics highlight the importance of hosting major events.

Figure 3-1 Visitor expenditure (£bn) in the LCR since 2012 (excluding Covid-19 years)



Source: STEAM LCR Data (2024)

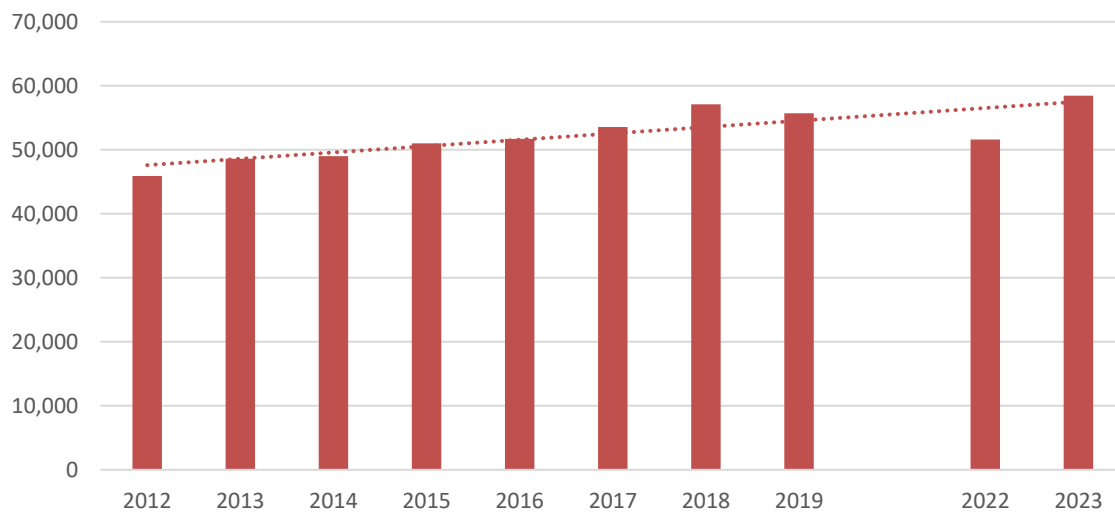
The employment supported in the LCR visitor economy, based on STEAM data, also demonstrates an increase above expected trend lines. If previous growth rates were followed, excluding the two Covid-19 years, it was expected that there would be 56,944 FTE jobs in the visitor economy. However, as shown by the STEAM data below, the FTE employment in the LCR visitor economy increased to 58,435 in 2023 – **1,491 FTE jobs above expectations.** Our analysis highlighted that

⁶ Global Tourism Solutions, (2024); Liverpool City Region STEAM Model Report

611 one-year FTE jobs were likely supported by the immediate spending effects during the two-week period.

As noted above, 2018 was the other year which performed above the trendline as employment was created to service the major events that took place during the year. The Giants Spectacular drew international visitors, enhancing the city's appeal as a tourist destination and boosting expenditure and employment. The 10th Anniversary of the European City of Culture attracted tourists through numerous special events, exhibitions, and performances throughout the year. The high-profile concerts drew large crowds, increasing spending in accommodation, dining, and entertainment.

Figure 3-2 FTE employment in the LCR visitor economy since 2012 (excluding Covid-19 years)



Source: STEAM LCR Data (2024)

In 2023, international tourism visits returned to pre-pandemic levels⁷, jumping a notable 28% from 2022 to 2023, with Eurovision a key driver for international visitors as the city welcomed a diverse audience. Compared to pre-pandemic levels in 2019, the spend per visit was up 23.9% from £462 to £572 and the total spend was up 28.7% from £418 million to £538 million. Both visits and spend were also greatly above 2018, which appeared from STEAM data to be the other year which benefitted from Liverpool hosting major events outside of a typical yearly programme.

Table 3.1: Merseyside International Inbound Tourists						
	2019	2021	2022	2023	2019-23 % change	2022-23 % change
Visits (millions)	0.91m	0.16m	0.74m	0.94m	3.9%	27.9%
Nights (million)	4.61m	1.75m	3.93m	4.69m	1.8%	19.4%
Spend (million)	£418m	£114m	£374m	£538m	28.7%	43.9%
Spend per visit (£)	£462	£716	£508	£572	23.9%	12.5%

Source: Office for National Statistics International Passenger Survey 2019-2023

⁷ Office for National Statistics, (2024); International Passenger Survey 2019-2023

The boost to Liverpool's visitor economy in 2023, driven by an influx of international tourists, was further supported by increased hotel occupancy and higher average daily rates. The hotel occupancy in Liverpool for April to June was higher than the same period in 2019, although the overall year average was marginally below. The occupancy for LCR for April to June was broadly the same as 2019. Both areas, however, reported substantially higher average daily rates and revenue per available room, further indication of the increased demand and enhanced spending during 2023. These rates remained high throughout the rest of 2023, after the delivery of the event. The rise in demand for accommodation reflected the city's appeal as a cultural and event destination during Eurovision, contributing significantly to overall visitor spending.

3.2.2 Long-lasting impacts

Our visitor survey from May 2023 provided insights into the likelihood of Eurovision 2023 attendees returning to Liverpool for tourism. Around 64% of domestic tourists and 73% of international tourists stated that they would definitely visit Liverpool again.

Our follow-up visitor survey with ticket holders and attendees provides the basis for our expenditure assessment. The questionnaire was structured in line with our previous methodology. Our analysis of this survey demonstrates that 43% of domestic tourists and 22% of international tourists have revisited Liverpool over the last 12 months. Although these proportions have not reached the rates suggested in the initial survey, it is a remarkably strong return rate during the first year after the event. Domestic tourists, on average, have returned 2.1 times over the year whilst international tourists have revisited Liverpool once.

To calculate the visitor expenditure, we have used the respective per visitor spending figures from the Spirul survey for domestic and international tourists. Residents within the LCRCA are not included in this year-on survey as their spending over the last year would have taken place in this target area irrespective of Eurovision 2023. Of key importance to our net additional impact assessment is consideration of additionality as follows:

- **Leakage:** Spending outside the target area, such as travel to Liverpool or spending outside the LCR, has been removed as leakage. Leakage was around 50% for both domestic and international visitors, as a significant proportion of their spending within their trip was travelling to Liverpool;
- **Displacement and deadweight:** A combined displacement and deadweight factor has been calculated using the survey responses. Respondents who returned for work or to visit family/friends have been considered displacement/deadweight – 34% for domestic tourists and 25% for international tourists. These figures broadly align with the proportion of respondents in the 2023 visitor survey who stated they would have visited Liverpool again anyway, which was 24% of domestic tourists and 17% of international tourists. The higher deadweight/displacement figure from this year's survey has been used to be prudent.

Based on these calculations, Eurovision 2023 is calculated to have led to an **additional 72,454 trips between June 2023 and May 2024 from attendees to Eurovision.**

These trips from Eurovision attendees, removing those who are judged to have revisited anyway, have contributed a net **additional £11.1m to the LCR economy over the last year** since the event.

Table 3.2: Additional visitors and trips to Liverpool from Eurovision 2023 attendees since the event

	Total visitors in 2023	Total visitors in 2024 from Eurovision attendees	Total trips in 2024 from Eurovision attendees	Net additional trips in 2024 from Eurovision attendees
Domestic tourists	111,840	47,532	100,656	67,290
International tourists	30,984	6,885	6,885	5,164
Total tourists	142,823	54,417	107,541	72,454

Table 3.3: Net additional visitor spending by Eurovision 2023 within the Liverpool City Region since the event

	Gross local spend (accounting for leakage)	Net additional local spend (accounting for leakage, displacement, and deadweight)
Domestic tourists	£11,767,956	£7,940,238
International tourists	£4,303,293	£3,227,470
Total tourists	£16,071,249	£11,167,708

These figures demonstrate that major events help the perception of the city and the subsequent likelihood of tourists visiting. The additional trips since the event are largely from an increased popularity with domestic tourists. This finding is supported by Liverpool One data, which has seen increased footfall this year, in part driven by an increase in visitors from a domestic tourism catchment. These footfall numbers are above UK and North West benchmarks, with Eurovision cited as playing a role in this popularity.

Although the additional tourism since the event is not as significant as the initial spending boost to the economy, it is evidence of the potential positive long-lasting economic impacts arising from Eurovision 2023. Given that 73% of respondents within our latest survey have stated that they will definitely visit Liverpool again, the successful hosting of Eurovision 2023 has remained strong in the minds of tourists who attended the event and could lead to further benefits in the future.

3.3 Key business sectors

3.3.1 Overview

The business base data shows that the number of micro businesses has declined in Liverpool and LCR by around 2% from 2022 to 2023. Compared to pre-pandemic levels in 2019, the micro businesses in Liverpool have declined by 3%. This is likely due to them being the most vulnerable in recent years to the negative impacts of the COVID-19 pandemic and the cost of living. This has caused the overall business count in the Liverpool and LCR economies to shrink by similar amounts. This suggests that city and city region employment figures are being buoyed by an increasing number of medium and large businesses in the area.

Table 3.4: Total Business base in Liverpool and LCR (2019-2023)

	2019	2020	2021	2022	2023	2019-23 % change	2022-23 % change
Liverpool: Whole Economy							
Micro	13,020	12,865	12,985	12,955	12,665	-2.7%	-2.2%
Small	1,400	1,395	1,355	1,425	1,485	6.1%	4.2%
Medium	265	275	270	275	290	9.4%	5.5%
Large	75	75	70	85	85	13.3%	0.0%
Total	14,770	14,600	14,700	14,725	14,540	-1.6%	-1.3%
LCR: Whole Economy							
Micro	37,545	38,010	39,055	38,455	37,540	0.0%	-2.4%
Small	4,115	4,175	4,085	4,185	4,320	5.0%	3.2%
Medium	755	785	780	790	820	8.6%	3.8%
Large	185	185	195	185	205	10.8%	10.8%
Total	42,610	43,165	44,115	43,615	42,885	0.6%	-1.7%

Source: NOMIS Business Count data

Across 'Eurovision-related sectors'⁸, micro-enterprises have similarly seen a decline in Liverpool compared to pre-pandemic levels and over the past year of data. Micro enterprises have done better in the broader LCR compared to pre-pandemic but have seen a challenging past year despite Eurovision 2023.

The statistics shown below suggest that there were increased opportunities for small and medium businesses in the Eurovision-related sectors over the last year, with the number of businesses in this category increasing by at least 5% in Liverpool and LCR. However, the increased expenditure across the economy did not sustain micro businesses, with the business count in this category falling despite the significant economic boost from Eurovision.

Table 3.5: Total Eurovision-related business base in Liverpool and LCR (2019-2023)

	2019	2020	2021	2022	2023	2019-23 % change	2022-23 % change
Liverpool: Eurovision sectors							
Micro	3,180	2,795	2,780	2,985	2,870	-9.7%	-3.9%
Small	385	380	385	410	455	18.2%	11.0%
Medium	50	50	50	60	65	30.0%	8.3%
Large	5	5	5	10	5	0.0%	-50.0%
Total	3,635	3,235	3,235	3,470	3,400	-6.5%	-2.0%
LCR: Eurovision sectors							

⁸ Eurovision sectors relate to 47: Retail trade, except of motor vehicles and motorcycles; 55: Accommodation; 56: Food and beverage service activities; 59: Motion picture, video and television programme production, sound recording and music publishing activities; 60: Programming and broadcasting activities; 90: Creative, arts and entertainment activities; 91: Libraries, archives, museums and other cultural activities; 93: Sports activities and amusement and recreation activities

Micro	7,255	7,020	7,950	7,750	7,585	4.5%	-2.1%
Small	980	985	980	1,050	1,110	13.3%	5.7%
Medium	100	105	105	110	120	20.0%	9.1%
Large	15	15	15	15	20	33.3%	33.3%
Total	8,355	8,145	9,050	8,930	8,840	5.8%	-1.0%

Source: NOMIS Business Count data

3.3.2 Events and hospitality

Our research has indicated that Liverpool has benefitted from the **enhanced reputation as a destination for major events, demonstrating itself as a credible location for high profile events**. Eurovision has also raised ambitions in the city, with a willingness to pursue other big international events. Liverpool has recently secured the 2025 World Boxing Championships at M&S Bank Arena, with more announcements expected. Stakeholders have also noted that there has been an increase in enquiries about hosting large-scale events, particularly relating to business conferences. It is evident that Liverpool is now seen as an inclusive city that can host a variety of events, including those requiring public open spaces and increased security.

Eurovision 2023 provided **widespread advertising, marketing and PR benefits to the city**. Different areas of the city were showcased throughout the media coverage, in a way not previously experienced for Liverpool. This coverage enabled business and visitor perceptions of Liverpool to be re-evaluated. These effects from Eurovision 2023 have supported the delivery of the LCR Visitor Destination Marketing Strategy, including securing funding for new music projects in the city. Liverpool has also become the world's first 'Accelerator City' for climate action, under UN Climate Change's Entertainment and Culture for Climate Action (ECCA) programme. The title comes in recognition of Liverpool's impressive commitment to innovation and smart regulation to rapidly decarbonise the live music and TV/Film production sectors. A three-night live music series at Liverpool Arena in November was announced as part of this initiative.

A substantial key legacy impact from Eurovision involves a **joined-up delivery approach to boost the impacts from major third-party events**. Although the booking of neither the Labour Party Conference nor Taylor Swift's three Anfield gigs were influenced by Eurovision 2023, the benefits from these events were maximised by the lessons learned from the delivery of Eurovision. The Council and local partners have increased their expertise in delivering 'wrap around' activities within outdoor spaces to increase footfall and spending. Residents are invested in the city's cultural sector whilst visitors have an increased desire to extend their stay. The legacy impacts from Eurovision were particularly apparent during the Taylor Town Trail, as shown below.

Case study: Taylor Town Trail

The Council worked in partnership with local social enterprise Make CIC to deliver a free walking trail of 11 art installations inspired by the 11 Eras of Taylor Swift with sign-off from the artist's management team. All 11 artworks were delivered by artists and makers from across the city region, **developing and nurturing local, young, creative talent**. Artworks were in key

areas of the city in order to enhance footfall and encourage audiences to visit new places and spaces across the city centre.

The concepts developed by Culture Liverpool were designed to create shareable content and photo opportunity points to create more noise for Liverpool online. The trail also offered a reason for audiences, whether they had a ticket to one of the shows or not, to visit the city centre and discourage crowds building unnecessarily around Anfield Stadium. In addition, Make CIC hosted a series of ticketed Taylor-themed craft workshops for fans to further engage with the project and the buzz in the city.



The campaign was a huge success, generating local and international PR for the city, with a highlight being a feature on The Today Show in the USA and on CNN. The **PR value generated greatly exceeded the modest cost of the project**. Additionally, statistics from local partners showed a **considerable increase in footfall across all sites during the delivery of Taylor Town Trail**. For example, Liverpool ONE saw footfall reach over 100,00 on Saturday 15th June, in line with footfall during Grand Final of Eurovision 2023. MetQuarter Liverpool's footfall more than doubled for the duration of the Trail compared to a similar period during the year.

Feedback from fans online and in person was resoundingly positive, with many asking their own cities across the globe to emulate what Taylor Town in Liverpool delivered. **Cities around the world, including Toronto in Canada, have since contacted the team for advice** around delivering a similar campaign when Taylor visits their city. This situation mirrors what has taken place since Eurovision, as other Eurovision hosts want to replicate the overwhelmingly positive experience delivered by Liverpool in 2023.

Despite the above, feedback from some hospitality organisations suggests the events programme in 2024 did not materially impact their business opportunities. Hotel occupancy for Liverpool and LCR in 2024 was, as expected, slightly below the levels from 2023 and as such, remain below pre-pandemic levels. The average daily rate increased significantly in 2023 during Eurovision and although it has been reduced to try to maintain occupancy rates, it remains higher in 2024 than the pre-pandemic levels which is a positive sign of increased resilience despite the hotel feedback. To support tourism and local hotels the year after a major event, venue operators have indicated multi-year agreements with outlets could be secured during negotiations to further capitalise on the increased media attention.

Overall, Liverpool has captured new opportunities from Eurovision particularly around the Taylor Town Trail, with longer-term legacy impacts likely to arise from the ‘Accelerator City’ designation and new high-profile events such as World Boxing. A **major events strategy is being developed** to build on this positive legacy of Eurovision 2023. The development of this strategy should include substantial collaboration with local hospitality organisations, who have stated a desire to be involved in discussions. Effective communication of upcoming events with hotels will be key to sustaining this momentum.

3.3.3 Music

Liverpool’s rich musical history, rooted in the global influence of The Beatles, combined with the success of hosting Eurovision 2023, positions the city as a vibrant destination. In terms of policy, Eurovision 2023 was hugely beneficial at putting music firmly back in the centre of the conversation within the LCRCA. The event has clearly **demonstrated the social and economic impacts music and culture can have on society**. The delivery of Eurovision 2023 showcased LCR based artists throughout the Euro Village. As noted above, other cities are keen to learn from Liverpool about supporting culture and hosting major events.

Based on this, there is a real opportunity to **further develop the Liverpool Music City brand**. Prior to Eurovision, Liverpool was the only UNESCO City of Music that did not have a dedicated website. There is some evidence that the legacy funding invested into the development of the website has started to create opportunities in the music sector. Eurovision has brought more interest in the city’s music sector (not just heritage focused) and has led to the development of new projects including funding bids to government. Additionally, the team behind Liverpool’s Eurovision Song Contest was honoured with the first ever UNESCO City of Music Award, set up to recognise outstanding contributions to the local music sector. Continuing to invest in the Liverpool Music City international brand, which will help to maintain music’s enhanced role from Eurovision as a driver for inward investment and tourism, should be a key priority for the city and local partners.

Smaller music venues and businesses in the region, who are facing significant challenges relating to the delivery of post-Brexit and post-pandemic events, need to be incorporated into these plans. There is concern over the survival of small businesses in the LCR and how this would impact the wider music reputation of the region. The wider opportunities from Eurovision do not currently appear to have entirely fed down to smaller grassroots music organisations across the city, with many continuing to be under pressure to survive as identified in stakeholder engagement. This feedback mirrors the fall in micro-enterprises in Eurovision related sectors, despite an improved reputation as a major event destination, suggesting that trickle-down effect is not taking place. It is important to note, however, that supporting small music businesses after the event was not a primary objective of Liverpool’s hosting of Eurovision, as the city stepped in at the last minute to deliver the global event on behalf of Ukraine. The achievement of the delivery team to successfully deliver Eurovision with only six months planning cannot be understated, and it is highly likely that further legacy impacts could have been realised if the timeframe had allowed.

It is expected that future major events in Liverpool will have a more typical lead-in period to develop this type of legacy support for small businesses. The plans for major events should look to invest within the local music event infrastructure, alongside a legacy marketing strategy, to ensure spillover effects felt most by local artists and businesses. The Taylor Town Trail is the type

of campaign that should continue to be prioritised as part of future events to nurture local artists and creatives.

3.3.4 Culture

Our business survey with the LCR Culture Network has identified some potential long-lasting beneficial impacts, although there are also concerns raised by other companies regarding missed opportunities and hyper-local impacts.

A summary of the potential business-related benefits to small cultural organisations are shown by:

- 25% of cultural businesses in the survey have **grown in terms of employees** since May 2023, with all companies stating that Eurovision at least in part played a role in this growth;
- 63% of businesses have **made investments in the last year**, although nearly half of these businesses believed that Eurovision did not play a role in these investments;
- 55% of businesses believe that **Eurovision has anecdotally played a role in either increased visibility or improved brand perception**;
- 63% of businesses have **established new partnerships or collaborations as a result of Eurovision** including with key partners such as Arts Council, British Council, Ukrainian Institute, and Association of Contemporary Jewellery.

Despite this, smaller cultural organisations located in boroughs outside the city centre have noted that there has been limited impact. Businesses residing outside the core Eurovision locations cited that there was considerable upheaval during the event but they are yet to see any measurable benefit. This finding, that the direct benefits were largely focussed within the city centre, has been found in other engagements as well as the Heseltine report.

3.4 Community

3.4.1 Volunteering

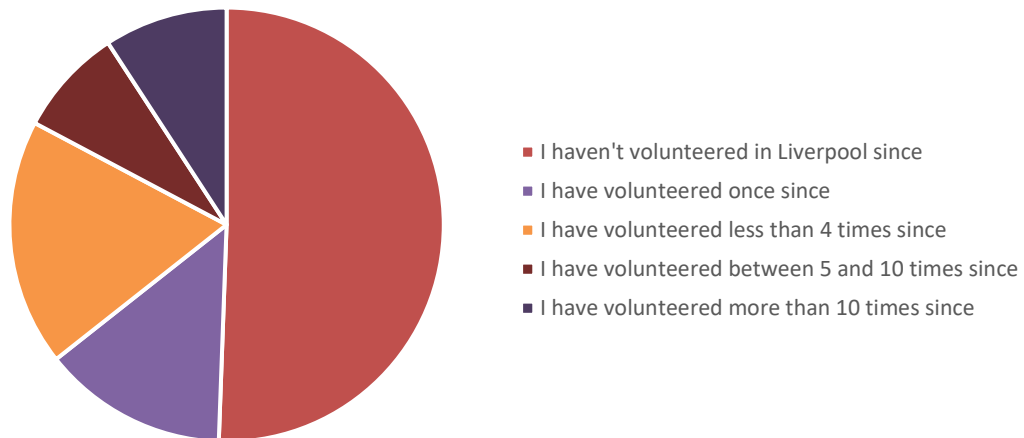
Volunteers play a pivotal role in major events such as Eurovision, providing essential support and diverse skills that significantly enhance operational efficiency and the visitor experience. Their varied perspectives contribute to a positive event atmosphere, creating a lasting impact on participants. Furthermore, volunteers act as valuable event ambassadors, significantly expanding the event's reach and contributing to its overall success and reputation.

The Eurovision 2023 volunteering programme organised and led by LCC with support from the DWP and the NHS offered 475 individuals a unique opportunity to be at the core of this iconic event, contributing to the legacy of the event and reflecting the city's welcoming tradition. Volunteering provides a chance to forge new connections, acquire valuable skills, and create cherished memories. Being part of a team and contributing to an event that will be remembered for years to come can be a rewarding experience, enhancing wellbeing.

In theory, the benefits that can arise from volunteering at a major event should make participants more likely to volunteer again in the future. The follow-up survey of volunteers demonstrates that this was the case with Eurovision, as **77% of respondents have since volunteered in Liverpool or elsewhere around the country**. This proportion of repeat volunteers actually exceeds the figure from the initial survey last year, whereby 68% of volunteers expressed they were extremely likely (scoring 9 or 10 on a Likert scale) to volunteer again in the future. This is strong evidence of the lasting impact and value of volunteering at events like Eurovision.

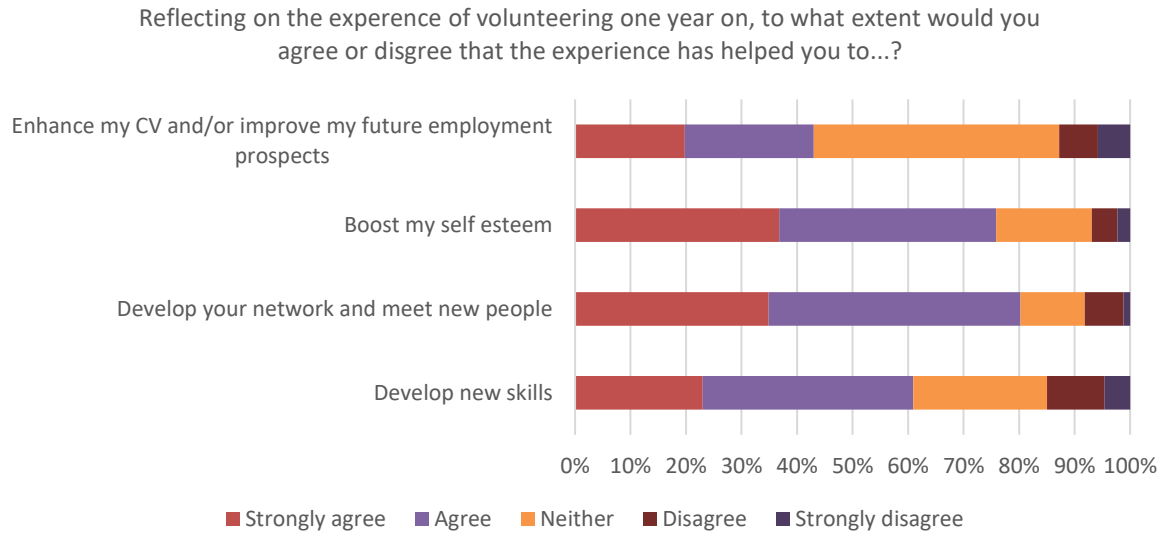
Around half of the respondents have volunteered in Liverpool specifically, with 17% of respondents volunteering over 5 times in Liverpool since Eurovision 2023. The unique opportunity to play a part in an international event in Liverpool appears to have had a lasting impact on volunteers, with 80% of respondents agreeing that volunteering at Eurovision has helped them gain further volunteering opportunities.

Figure 3-3 Volunteering experience in Liverpool since Eurovision 2023



The **positive long-lasting benefits from volunteering at Eurovision 2023 are clearly demonstrated by their views on how the experience has helped them one year on**. Volunteering can deliver substantial wellbeing benefits to participants, as recognised in Green Book Wellbeing guidance. Over 75% of respondents agree or strongly agree that the experience of volunteering at Eurovision 2023 boosted their self-esteem. There were further social inclusion benefits, as 80% of respondents believe that volunteering at Eurovision 2023 developed their network and helped them meet new people. There are also potential skills benefits from volunteering, with over 60% of respondents feeling that they developed new skills due to the experience.

Figure 3-4 Social value of volunteering at Eurovision 2023



Of the volunteers who were not previously in employment, 12% believe that volunteering at Eurovision has helped them move into employment. These achieved employment opportunities demonstrate how volunteering can enhance their CVs and improve future prospects.

The overwhelming positive volunteering experience is also evidenced by a series of high Net Promoter Scores (NPS)⁹ regarding the event, as shown in **Table 3.6** below. To achieve such high NPS a year on from the event highlights the enduring nature of the wellbeing benefits obtained at the event. However, the event has not influenced the volunteers' views with regards to Liverpool as a place to live, whereby other socio-economic factors are likely to take precedent.

Table 3.6: Net Promoter Scores from the 2024 Volunteer Survey	
	NPS
Recommend experience of being a volunteer to friend/family	83%
As a tourist destination	74%
As a place to live	54%

3.4.2 Employment support

With the pandemic as the context and an ongoing shortage of workers in the hospitality industry, Eurovision 2023 presented an opportunity to strengthen Liverpool City Region's hospitality sector, promoting long-term growth and recovery from the setbacks caused by COVID-19 and Brexit. Eurovision presented an opportunity in Liverpool to change perceptions of the hospitality sector, establishing it as a destination career choice and ensuring a sustainable legacy.

⁹ Net promoter score (NPS) is a market research measure that is based on a survey question asking respondents to rate the likelihood that they would "recommend" aspects of a host city or the event they attended. The NPS metric can help quantify the event's effects on visitor satisfaction, destination branding, and economic outcomes. Survey respondents that gave a score of 6 or below out of 10 are called Detractors, those who give a score of 7 or 8 are called Passives, and those who gave a 9 or 10 are Promoters. The aggregate percentage of detractors is then deducted from the aggregate percentage of promoters to provide the NPS.

The event's activities directly created short-term employment opportunities in Liverpool as shown by the immediate impact assessment last year, occupied by both local residents and workers from outside the region who capitalised on the increased spending and opportunities available. This increase in workforce demand resulted in the expansion of various employers that were responsible for the management and coordination of the event.

While major events like Eurovision 2023 often receive criticism for only supporting short-term job prospects, with less focus on utilising such events as catalysts for longer-term employment opportunities, this was not the case for Liverpool. Several key organisations in LCR, including Job Centre Plus, DWP, Growth Platform, Culture Liverpool, LCRCA, and LCC, collaborated on a comprehensive employment initiative for Eurovision 2023. This initiative aimed to enhance residents' access to job opportunities created by Eurovision, thus contributing to the broader economic recovery efforts.

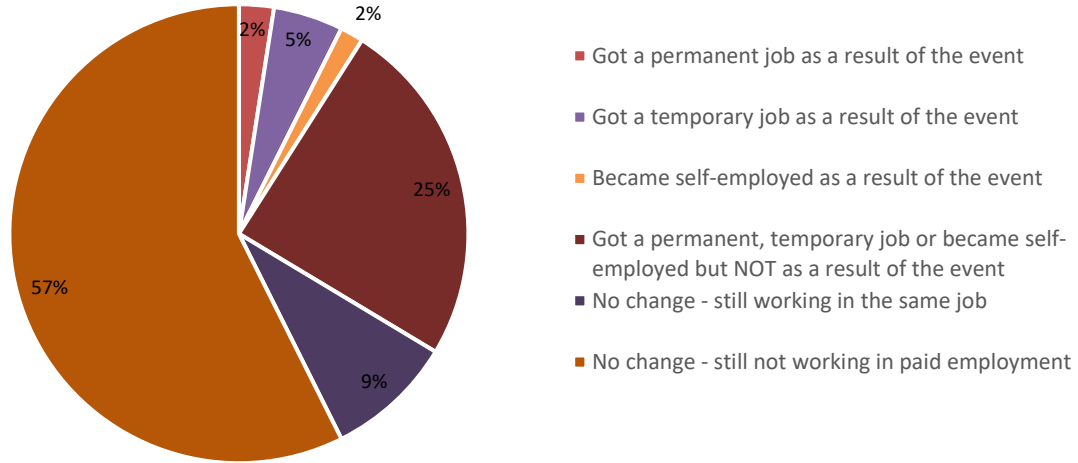
Commencing on 1st March 2023 with a significant event at ACC Liverpool, a series of Eurovision Jobs Fairs were held, resulting in an impressive turnout of participants. Over the course of these events 3,287 jobseekers, 173 employers, and 52 skills support providers were actively engaged.

During these events, an impressive number of over 6,000 job openings were advertised, leading to 394 jobs being offered on-the-day, and 3,216 second round interviews. The very nature of Eurovision 2023 jobs fairs has underscored the enduring significance of in-person recruitment interactions. This approach offers individuals opportunities beyond the confines of CVs or application forms, which is particularly pertinent in a time when online and digital avenues are gaining prominence.

However, despite this apparent initial success from the job fairs and the positivity surrounding the events, the cohort survey presents a **less positive picture in terms of successfully moving residents into employment a year after the event**. Overall, 34% of respondents¹⁰ have moved into paid employment after volunteering at Eurovision. However, only 9% stated they gained employment directly as a result of the event whilst the remaining 25% stated it was not a result of the event.

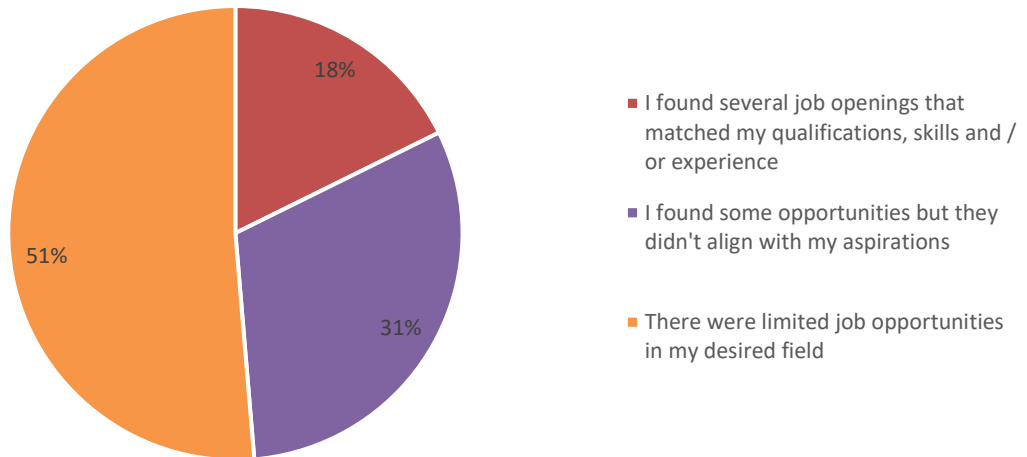
¹⁰ The cohort survey was circulated to over 1,000 relevant individuals by DWP via email, with 139 respondents forming the basis of our analysis

Figure 3-5 Occupation status after attending Eurovision recruitment event



The limited change in employment status by the cohort can be explained by their views on the overall experience. Although 18% of respondents found several job openings that matched their qualifications, skills and / or experience, over half thought there were limited job opportunities in their desired field as shown in **Figure 3-6** below.

Figure 3-6 Experience of attending the Eurovision recruitment event



However, despite this, there does appear to be noticeable social and developmental benefits to the attendees at the recruitment event. Over 57% of respondents either agreed or strongly agreed that attending the event helped develop their network and meet new people, whilst 59% of respondents agreed or strongly agreed that the event helped develop new skills and improve future employment prospects. Therefore, although the recruitment event did not deliver the

immediate impact that may have been expected, there are considerable long-term benefits that arise from this type of targeted employment support activities that should be recognised.

Figure 3-7 Social value of attending the recruitment fair at Eurovision 2023



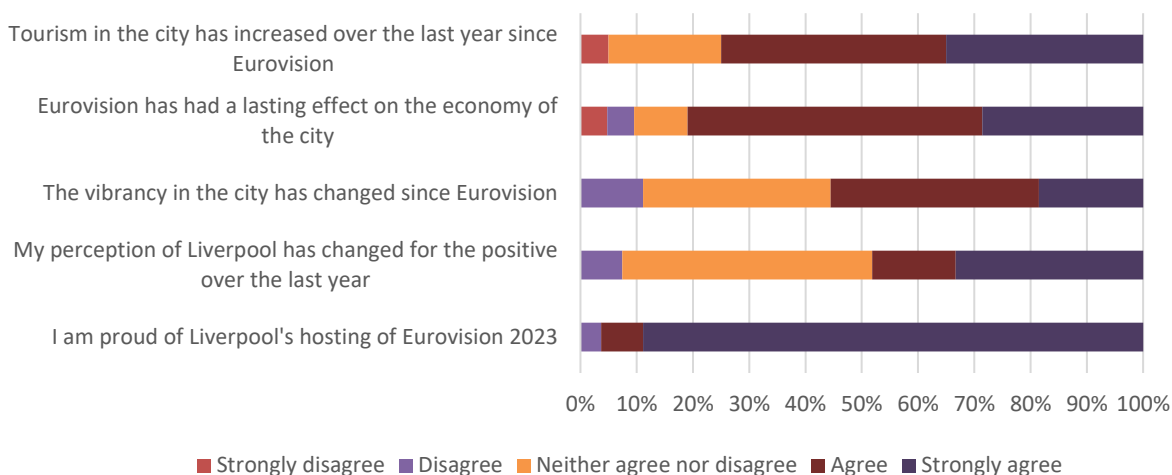
3.5 Image

Our first report concluded that **the successful hosting of Eurovision in 2023 fostered a strong sense of community pride among Liverpool's residents**. The collective effort and shared excitement in being part of such a monumental event united the city. Residents took pride in showcasing their city's hospitality, culture, and capabilities to a global audience. This sense of pride continued to resonate even after the event, contributing to a heightened sense of identity and unity among Liverpool's diverse population.

The research undertaken as part of this second-stage report emphasises this finding, with the LCR residents who responded to the follow-up visitor survey clearly demonstrating their immense pride in the city. **Over 95% of LCR respondents were proud of Liverpool's hosting of Eurovision 2023**. This viewpoint is reaffirmed by the wider industry, where there have been comments that Liverpool exceeded all other hosts of the song contest.

In addition, the LCR respondents indicate that there have been long-lasting beneficial impacts, with 81% agreeing that there has been a lasting effect on the city economy and 75% believing that tourism in the city has increased over the last year. Around half of the respondents believe that the vibrancy of the city has changed since Eurovision and their perception has changed for the positive over the last year. The enhanced image benefits appear to be one of the key lasting impacts arising from Eurovision 2023, which could lead to other socio-economic benefits for many years.

Figure 3-8 LCR residents views on Eurovision 2023 a year after the event



Net Promoter Scores (NPS) also provide a useful baseline for strategic planning, investment decisions, and marketing when looking at the legacy and long-term economic benefits for the city. Recency bias from respondents can be a reason for higher scores whilst the event is taking place, compared to when the questions are revisited one year later. Another factor could be that the image and perception impact fade over time as the event is further in the past.

However, the NPS for Liverpool appears to remain strong, with only a minor drop in terms of overall recommendation and a higher NPS for Liverpool as a tourist destination. These figures reassert many of the key findings from this assessment, that the city has now established itself as a major global tourism destination particularly for large-scale international events.

There has been a slight fall in the inclusivity and safety scores. However, the NPS for these questions remain positive, as a score above 0 is generally considered good because it indicates that a business has more promoters than detractors.

Table 3.7: Net Promoter Scores from the 2023 and 2024 Visitor Surveys		
	2023 Survey	2024 Survey
Recommend Liverpool to a friend/family	81%	79%
Liverpool as a tourist destination	76%	78%
Liverpool for being an inclusive place to visit	88%	70%
Liverpool for being a safe place to visit	80%	38%

On the whole, Liverpool is still seen as **an inclusive place to visit for tourism**, which is a key enduring impact from the delivery of Eurovision 2023. It should be noted that NPS scores above 70% are still seen as very high and therefore, the positive perception impacts for Liverpool are lasting from Eurovision 2023.

Liverpool delivered the event admirably on behalf of Ukraine and have continued to work with Ukrainian artists over the last year. The Council has enhanced its ability to deliver inclusive campaigns such as the Taylor Town Trail, whilst the planned events through the Accelerator City initiative will help to maintain these legacy impacts. Additionally, Eurovision engaged with local

schools and communities through Eurostreet and Eurolearn, which had not been done to this extent by a host city. The culture teams at the Council have continued working with areas who had not traditionally engaged in cultural activities, prior to their involvement during Eurovision.

Section 4

Value of Eurovision (TCM)

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C O N S U L T I N G

4 Travel Cost Method (TCM) for Economic Valuation

4.1 Introduction

Substantial effort has been directed at the challenge of valuing non-market goods and services. Established techniques including variants of revealed preference (RP) and stated preference (SP) approaches have all been employed, in different scenarios, to aid the process of valuation.

Revealed preference approaches are often useful in ex-post contexts where there is some evidence of choices already made by individuals. Since revealed preference approaches deal with actual behaviour in contrast to approaches that address hypothetical scenarios, they can generate robust estimates of willingness to pay (WTP).

The travel cost method (TCM) is a well-established technique originally developed to estimate recreational use values of non-market goods, traditionally outdoor natural areas. The basis of the TCM lies in recognition that while a recreational experience may be 'unpriced', many of the inputs used to generate the experience may well have a market price. As such, travel costs can serve as a proxy for the value of accessing the venue delivering the experience.

As with all valuation techniques, the TCM comes with some caveats. In the first instance, TCMs focus on use-value rather than non-use/option values. In terms of cultural and heritage institutions, it is often claimed that TCMs elicit the value of a trip to the institution rather than the cultural/heritage value produced by the site itself. Whether this criticism applies in the case of shorter-term events such as those within Eurovision is open to debate.

4.2 Approach

A full commentary on the modelling framework and spatial design is provided in Appendix A.

Postcode data from the visitor surveys has been extracted to calculate the origin points for each visitor. Where a full postcode is not provided, the first part of the postcode has been used to identify site coordinates. For international visitors, the capital city of the country has been used as the starting location.

4.2.1 Travel Costs

The relationship between travel costs and count patterns is the primary feature of interest in TCM analysis. For the purposes of this exercise, we compute straight line distances between origin coordinates and Eurovision venues and approximate travelled distance by applying a 1.2 uplift factor.

Generalised travel cost (GTC) matrices are constructed by taking into account the travel time (approximate travelled distance, multiplied by average speed, multiplied by value of travel time), and financial travel costs (vehicle operating costs or fares) for individual travel modes. The chosen mode of travel for each survey respondent has been captured within the survey.

Travel time has been valued with “non-working – other” market price values for 2023 from the DfT TAG Databook, rebased from 2010 to 2023 prices using the GDP deflator.

Eurovision GTC Assumptions – England, Scotland and Wales
<ul style="list-style-type: none"> • Walking: average speed of 5kph, giving an average GTC per km of £1.35. No financial costs; • Scooter: average speed of 15kph, giving an average GTC per km of £0.46. No financial costs; • Car (driver): average speed of 48kph; <ul style="list-style-type: none"> ○ fuel consumption calculated using the function $L = a/v + b + c.v + d.v^2$ where L = consumption, expressed in litres per kilometre (kwh per km for electric vehicles); v = average speed in kilometres per hour; and a, b, c, d are parameters defined for each vehicle category (petrol, diesel and electric), given in the TAG Databook; ○ fuel consumption multiplied by fuel costs, inclusive of resource costs, duty and VAT to calculate fuel cost per km for petrol, diesel and electric vehicles, with values given in TAG databook; ○ weighted average vehicle fuel cost per km calculated using vehicle fleet proportions for 2023 given in TAG Databook; ○ non fuel vehicle operating costs per km calculated for each vehicle category using non work values given in the TAG databook, with a weighted average calculated based on 2023 vehicle fleet mix; ○ average GTC combining travel time, fuel and non-fuel vehicle operating costs is £0.26 per km. • Car (passenger): average speed of 48kph, giving an average GTC per km of £0.14. No financial costs; • Bus or coach: average speed of 30kph, with an average fare per km of £0.12. Average GTC per km of £0.34; • Rail: average speed of 47kph with an average fare per km of £0.16. Average GTC per km of £0.30.

Although detailed, there are some caveats in relation to this process. Modal GTCs are calculated by main mode only – access/egress to/from that mode (first mile and last mile), as well as interchange, has not been computed. Likewise, average speeds and fares have been applied in computation of GTCs which may not accurately represent very short/long journey distances and parking charges have not been estimated. As such, the GTCs used may prove to be conservative.

For international trips, GTCs have been estimated based on the assumption that the trips are made, by air, from the capital city of the origin country. International GTCs include the following elements:

- Flight time from the capital city of origin country to either Liverpool John Lennon Airport or Manchester airport. These range from 1 hour (Ireland) to 34 hours (New Zealand) one-way.
- Typical fare for the above plane trips, which range from £26 to £880 one way.

- For plane journeys landing at Manchester airport, a train trip from the airport to Liverpool based on a typical time of 1 hour 18 minutes and fare of £10 (one way) has been added on.

All computed GTCs have been multiplied by two to take into account each direction of travel.

4.2.2 *Marginal External Costs*

Where new trips are made by car, there will be a marginal external cost to society in terms of:

- Congestion experienced by other road users;
- Increased likelihood of accidents;
- Increase in carbon, air pollution and noise emissions;
- Increase in infrastructure wear; and
- Indirect taxation impacts.

The TAG Databook provides a per kilometre value for each of the above.

For each trip by car, the estimated travelled distance has been multiplied by the 2024/25 national weighted average MEC and then converted to 2023 prices, resulting in £0.26 per kilometre.

4.3 Results

Based on the above approach, various revealed preference cultural values have been identified for each of the event typologies across the Eurovision 2023 programme. Our analysis demonstrates that hosting a major event such as Eurovision 2023 has significant cultural benefits to all attendees, which draws in a substantial number of international visitors who place a strong importance on attending this event. However, given that the primary use of Travel Cost Method (revealed preference) valuations is for inclusion in Green Book appraisals or Magenta Book evaluations, international visitors have been considered leakage for the basis of the assessment.

Once the values have been applied to domestic attendees, **it is calculated that Eurovision 2023 delivered a cultural value of £4.6m to attendees.** This value highlights the societal benefit for the UK through Liverpool's successful hosting of Eurovision 2023. Although a considerable amount of public funding was required to host the event over the two weeks, this analysis illustrates the benefit to the public from the Eurovision 2023 programme of events across Liverpool.

Table 4.1: Eurovision 2023 cultural value to visitors

Event	Individual visitors due to Eurovision ¹¹	Individual domestic visitors due to Eurovision	TCM value per domestic attendee	Cultural use Value (£m)
Eurovision Live Shows	55,637	46,937	£47.06	£2,208,838
Eurovision Village – Opening Party	16,288	15,995	£6.65	£106,364
Eurovision Village – Grand Final Party	6,689	6,180	£61.08	£377,458
Eurovision Village – other days	122,816	116,536	£13.93	£1,623,340
Other events – outside of the Village ¹²	38,779	37,548	£6.68	£250,819
Additional visitors due to Eurovision ¹³	65,652	-	-	
Total	305,861			£4,566,819

¹¹ The methodology within our first report reported for total attendees and individual visitors to each event category (accounting for double counting).

¹² This includes EuroFestival activities, performances and events.

¹³ The Travel Cost Method did not extend to the visitors to Liverpool to experience Eurovision, but did not attend an event

Section 5

Conclusions

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CONSULTING

5 Conclusions

5.1 Key findings

This assessment has reaffirmed our initial findings in 2023 that Eurovision made **a significant economic contribution to the LCR economy**. Data from STEAM and ONS as well as the Heseltine report indicate that our assessment of immediate impacts regarding visitor expenditure and employment generation are robust and supported by a strong evidence base.

Eurovision is expected to **leave a lasting impact on the city, representing another major and high-profile event which shapes the views of Liverpool**. Based on our mixed-method approach, there are several key findings demonstrating the long-lasting economic impacts of Eurovision 2023, as well as a couple of key areas for improvement in the coming years:

- Tourism has been bolstered by repeat visits from Eurovision 2023 attendees over the last year, with an **additional 72,454 trips between June 2023 and May 2024 from attendees to Eurovision**. The additional trips since the event are largely from an increased popularity with domestic tourists, with perceptions of the city improving due to the event.
- These trips from Eurovision attendees have contributed a **net additional £11.1m to the LCR economy over the last year** since the event. Although the additional tourism since the event is not as significant as the initial spending boost to the economy, it is evidence of the potential positive long-lasting economic impacts arising from Eurovision 2023.
- Eurovision 2023 attracted a significant number of domestic and international tourists to the city centre, largely to attend the various Eurovision related events. Based on a robust Travel Cost Method in line with Green Book guidance, **it is calculated that Eurovision 2023 delivered a cultural value of £4.6m to the domestic attendees to events**.
- The city has now **established itself as a major global tourism destination, particularly for large-scale international events**. Eurovision 2023 provided Liverpool with hugely positive media coverage, highlighting the music heritage of the city and the inclusivity of residents. Other cities want to replicate the success Liverpool has had with Eurovision, but also subsequently with the Taylor Town Trail.
- In terms of policy, Eurovision 2023 was hugely beneficial at **demonstrating the social and economic impacts music and culture can have on society**. There is a real opportunity to further develop the role music plays in the city and capitalise upon the positive views from residents around the sector.
- The **positive long-lasting benefits from volunteering at Eurovision 2023 are clearly demonstrated**, with over 75% of respondents agreeing or strongly agreeing that the experience of volunteering at Eurovision 2023 boosted their self-esteem and 77% of respondents volunteering again since the events.
- The successful hosting of Eurovision in 2023 fostered a strong sense of community pride among Liverpool's residents. **Over 95% of LCR respondents in our survey were proud of**

Liverpool’s hosting of Eurovision 2023. The city and the hosting of the event is perceived in high regard by residents and visitors alike, which can lead to longer-term impacts.

- **Liverpool successfully delivered Eurovision on behalf of the Ukraine with only six months planning,** which is a much shorter period than normal for this type of major event. As a result, however, it was not possible to put targets in place to ensure that the legacy benefits were felt by all local businesses. Our research indicates that while the event increased expenditure in the broader economy, small grassroots music organisations and micro enterprises have not seen sustained growth, highlighting the need for more inclusive strategies within future major events where there are longer lead-in periods for planning purposes.
- The cohort survey on the recruitment events presents a **less positive picture in terms of moving residents into employment than originally expected.** Around 57% of respondents are still not working in paid employment, whilst only 9% have moved into employment directly as a result of the event. However, there were social inclusion and skills benefits arising from these targeted employment support activities which should not be discounted.

5.2 Recommendations

Our research has led to **five interlinked recommendations**, focused around further developing the collaborative partnership-working approach that Eurovision 2023 helped stimulate in the visitor economy across the LCR:

- **Develop public-private partnerships through LVEP:** The LCR is home to one of the first LVEPs in the country, providing an important opportunity to collaborate between local government, tourism organisations, business associations, and key stakeholders dedicated to promoting and enhancing the city region’s visitor economy. The partnership-working approach during Eurovision was a key reason for the event’s success, with recent commentary focussing on how Liverpool embraced its role as host. The difficult socio-economic environment could stifle private investment and therefore, the LVEP needs to create a clear framework for strengthening public-private partnerships to maximise opportunities in the region. Private investors in the visitor economy need clear messaging on potential opportunities, with their input truly valued and an equal role for each party, for a solid funding commitment to be made.
- **Build the Liverpool Music City brand:** In 2015, Liverpool was designated as a UNESCO City of Music, highlighting the city’s reputation as a place full of music talent and a range of venues. Eurovision 2023 has further enhanced perceptions of the city as a place to visit, with music being placed at the forefront of people’s minds. Around £250,000 legacy funding from Arts Council England has been spent on the creation of the Liverpool Music website. This was much needed as Liverpool was previously the only UNESCO City of Music without a dedicated website. There is some evidence that the website has started to create opportunities in the music sector however, there should be substantial effort on building an international brand as Liverpool Music City. The music sector needs to stay at the top of the agenda, as a central vehicle for the city’s offer in terms of attracting inward investment and tourism. Liverpool’s rich cultural history, rooted in the global influence of The Beatles,

combined with the success of hosting Eurovision 2023, positions the city as a vibrant cultural destination. This brand can be leveraged to make Liverpool a go-to location for both international stars and local events, boosting economic growth through tourism, entertainment and year-round events that attract diverse audiences.

- **Continue amplifying third-party events with complementary activities:** Our research has indicated that Liverpool has benefitted from the enhanced perception as a destination for major events. The city has demonstrated its capability to host substantial events. The media coverage showcased the entire city, whilst delivery partners have become better equipped at utilising public spaces to maximise footfall. An example of this is the ‘wrap around’ activity around major events such as the Taylor Town Trail this year, which was considered a huge success. Eurovision demonstrated the wider social and economic benefits from a joined-up wider programme of activities around a major event including Eurolearn and Eurostreet. The LCR should continue to amplify these third-party events, with support provided to local businesses where necessary to expand the reach of the impacts. Creating a safe public atmosphere to attend events was a highlight of Eurovision and is of greater importance after the UK Riots 2024.
- **Produce a legacy fund for grassroots music and cultural businesses:** Smaller venues and businesses are facing challenges nationally due to post-Brexit and post-pandemic events. There is concern over their survival in the LCR and how this would impact the wider music reputation of the region. The wider opportunities from Eurovision does not appear to have entirely fed down to smaller grassroots music organisations across the city, with many continuing to be under pressure to survive. LCC and LCRCA should look to work with Arts Council and other funding partners to create a **Eurovision Legacy Fund specifically aimed at local operators and venues** to develop the city as the destination for music. There is a need to invest within the local music event infrastructure, alongside a legacy marketing strategy, to capture spillover effects from international events and fully capitalise upon Liverpool’s enhanced standing as a major events destination. It was not possible to establish this type of Fund prior to the event due to the shortened delivery timeframes, however, supporting local businesses as part of future legacy activities should be prioritised.
- **Design and communicate a clear LCR Events Strategy:** After Eurovision 2023, the programme of events in 2024 largely reverted to the baseline with the major events noted as Aintree, Labour Party Conference and Taylor Swift. Aintree has been a yearly fixture in the calendar, and its importance has lessened slightly in recent years, whilst Liverpool has always been the host city for the Labour Party Conference. Taylor Swift’s shows at Liverpool provided a much-needed boost for the city with increased footfall over the period. It should be noted that new events are starting to be announced within the calendar, such as World Boxing and the Accelerator City initiative, with Eurovision a likely influence on these decisions. The Major Events Strategy being developed by the LCR and LVEP will be crucial to implement lessons learned from Eurovision and maximise legacy impacts. A collaborative approach to designing a **significant events programme** across the LCR is highly recommended. Key stakeholders, including hotels and operators, need to be included within the key actions arising from this Strategy. Future opportunities should be communicated with the industry more widely, with a platform established for creative solutions if there is a noticeable lack of a major event each year.

Appendices

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Appendix A

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Appendix A TCM Modelling Framework

Modelling framework

Since the mid-1980s, TCM approaches have fundamentally changed to reflect the discrete, integer and non-negative nature of flow data. Count data structures now frequently dominate quantitative analysis with specific attention paid to distributional assumptions within econometric specifications and many of these models are set within the Generalised linear Model (GLM) framework that emerged in the 1970s and 1980s (Nelder and Wedderburn 1972¹⁴, McCullagh and Nelson, 1989¹⁵).

GLMs outline the dependence of a scalar variable y_i ($i = 1, \dots, n$) on a vector of regressors x_i . The conditional distribution of $y_i|x_i$ is a linear exponential family with probability density function (pdf):

$$f(y; \lambda, \phi) = \exp [(y\lambda - b(\lambda))/\phi + c(y, \phi)]$$

where λ is the canonical parameter that depends on regressors via a linear predictor and ϕ is a dispersion parameter that is often known¹⁶.

The functions $b(\cdot)$ and $c(\cdot)$ are known and determine which member of the distribution family is used. The dependence of the conditional mean $E[y_i|x_i] = \mu_i$ on the regressors x_i is specified via:

$$g(\mu_i) = x_i^T \beta$$

where $g(\cdot)$ is a known link function and β is a vector of regression coefficients which are estimated by maximum likelihood (ML) using iterative weighted least squares (IWLS).

In the first instance, the GLM approach provided a coherent structure within which to accommodate the Poisson distribution in modelling count data. With pdf:

$$f(y; \mu) = \exp(-\mu) \mu^y / y!$$

and canonical link:

$$g(\mu) = \log(\mu)$$

there exists a log-linear relationship between mean and linear predictor. The variance in the Poisson model is identical to the mean, thus dispersion is fixed at $\phi = 1$.

While the Poisson distribution is relatively straightforward to model in a GLM framework the requirement that dataset variance and mean equate (equi-dispersion) is frequently not met. Many datasets are overdispersed with variances substantially greater than means, lowering standard errors of estimates and undermining robustness.

Early attempts to address this issue involved either using the same estimating functions for the mean but using more robust sandwich covariance matrix estimators for inference or using mean and variance functions from the Poisson GLM but leaving the dispersion parameter ϕ

¹⁴ Nelder JA, Wedderburn RWM (1972). 'Generalized Linear Models.' *Journal of the Royal Statistical Society A*, 135, 370–384.

¹⁵ McCullagh P, Nelder JA (1989). *Generalized Linear Models*. 2nd edition. Chapman & Hall, London.

¹⁶ Zeileis, A., Kleibner, C., & Jackman, S. (2008). 'Regression Models for Count Data in R'. *Journal of Statistical Software*, 27(8), 1–25.

unrestricted, to be estimated from data. Both these (sandwich adjusted and quasi-poisson) approaches generate the same coefficient estimates but inference is adjusted for over-dispersion.

In the light of such difficulties, analysts started to test negative binomial (NB) distributions which emerge as a gamma mixture of Poisson distributions:

$$f(y; \mu, \theta) = [\Gamma(y + \theta)/\Gamma(\theta)y!][\mu^y\theta^\theta/(\mu + \theta)^{y+\theta}]$$

with mean μ and shape parameter θ ; $\Gamma(\cdot)$ is the gamma function. While the negative binomial model is not a special case of the general GLM, a maximum likelihood fit can be computed through an iterative process.

The NB model, on the other hand, still faced the difficulty of dealing with substantial numbers of zeroes in many applications and research turned to approaches capable of dealing with both issues. One early model type in this arena was the hurdle model, originally proposed by Mullahy (1986)¹⁷. The hurdle model combines a count data model $f_{\text{count}}(y; x, \beta)$ (left-truncated at $y = 1$) and a zero hurdle model $f_{\text{zero}}(y; z, \gamma)$ (right-censored at $y = 1$) with model parameters β, γ, θ estimated by maximum likelihood:

$$f_{\text{hurdle}}(y; x, z, \beta, \gamma) = (f_{\text{zero}}(0; z, \gamma)) \text{ if } y = 0,$$

$$f_{\text{hurdle}}(y; x, z, \beta, \gamma) = (1 - f_{\text{zero}}(0; z, \gamma)) \cdot f_{\text{count}}(y; x, \beta)/(1 - f_{\text{count}}(0; x, \beta)) \text{ if } y > 0$$

Hurdle models are essentially two-component models in which a truncated count component (such as Poisson or negative binomial) is employed for positive counts alongside a hurdle component (such as binomial) to reflect the profile of zeroes.

Following on from hurdle approaches, research moved to what have become known as zero-inflated models, two-component mixture models combining a point mass at zero with a count distribution, providing two potential sources of zeros. The zero-inflated density is a mixture of a point mass at zero $I_{\{0\}}(y)$ and a count distribution $f_{\text{count}}(y; x, \beta)$. The probability of observing a zero count is inflated with probability $\pi = f_{\text{zero}}(0; z, \gamma)$:

$$f_{\text{zeroinfl}}(y; x, z, \beta, \gamma) = f_{\text{zero}}(0; z, \gamma)I_{\{0\}}(y) + (1 - f_{\text{zero}}(0; z, \gamma))f_{\text{count}}(y; x, \beta)$$

where $I(\cdot)$ is the indicator function and the unobserved probability π of belonging to the point mass component is modelled by a binomial GLM $\pi = g^{-1}(z > \gamma)$. The corresponding regression equation for the mean is

$$\mu_i = \pi_i 0 + (1 - \pi_i) \exp(x_i^T \beta)$$

using the canonical log link. The full set of parameters of β, γ , and θ (if a negative binomial count model is used) can be estimated by maximum likelihood.

GLMs retain a prominent position in univariate modelling. However, they do not explicitly model other distribution moments that may be of interest. In contrast GAMLSS models (generalised additive models for location, scale and shape) operate by relaxing the exponential family assumption in GLMs and replace it with a very general distribution family. Here, the systematic part of the model is expanded to allow the mean (or location) as well as all the parameters of the conditional distribution to be modelled as parametric and/or additive nonparametric (smooth)

¹⁷ Mullahy J (1986). "Specification and Testing of Some Modified Count Data Models." *Journal of Econometrics*, 33, 341–365.

functions of explanatory variables. Estimation is based on backfitting-type Gauss-Newton algorithms with AIC-based selection of relevant predictors.

The Eurovision TCM developed below investigates each of these options and assesses estimates of consumer surplus that emerge. In the absence of evidence to the contrary, and with no basis on which to further discriminate, we interpret each distributed ticket as an attendance/flow to a Eurovision venue.

Spatial Framework

For purposes of analysis, and for conformity with the lowest spatial configuration available in the DfT TEMPro software, we aggregate individual records into MSOA areas. This gives us a sample base of areas across England and Wales and allows us to model ‘characteristics’ through MSOA level profiles. For the rest of the UK and international travel national level characteristics have been applied.

This highly skewed and zero-inflated count profile provides the dependent variable for our analysis with a series of regressors reflecting socio-economic characteristics of residents in MSOAs that may serve to promote/hinder visits to Eurovision venues.

A range of socio-economic indicators are now available at MSOA level. Recent release of Census 2021 datasets allows us to directly model age, qualification, occupation and ethnicity profiles by MSOA area¹⁸. We also use Census employment data to construct cultural/creative employment indicators to reflect potential attendance ‘driver’ effects related to career interests. Beyond the Census we use exploratory ONS data for net annual household income after housing costs at MSOA level. While the latter relates to 2018 it is a useful guide to spatial income variation and we supplement the measure by including the MSOA income deprivation score from the IMD. Finally, we also construct a COVID indicator, namely the proportion of COVID deaths as a proportion of all MSOA deaths in the 12 months prior to the start of Eurovision. This is included to reflect potential constraint effects on flows.

Early scrutiny of the regressor dataset confirmed expectations of extensive collinearity with particularly high correlations evident between measures of income, qualifications and occupation. Since the primary focus of the TCM analysis is the relationship between count patterns and travel cost rather than other indicators, we use dimensionality reduction to offset collinearity, undertaking a supervised principal component analysis (SPCA) of socio-economic indicators and including components – rather than the original indicators - in modelling. This approach allows full variability of the socio-economic indicators to be reflected in analysis.

Transforming a dataset (of given dimensionality) into a new reduced dimension dataset that is orthogonal, and retains as much of the initial data geometry as is feasible is a common undertaking in many disciplines. In practice, both linear and non-linear approaches are available within broader convex and non-convex frameworks.

Principal Component Analysis (PCA) is the most common of the more prevalent convex frameworks that typically require eigen-decomposition of full or sparse (spectral) matrices. Reduction is achieved by embedding datasets into a linear subspace of lower dimensionality with the projection maintaining as much data variance as possible. The leading eigenvectors outline a

¹⁸ We operate using 2011 MSOA boundaries to ensure compatibility with non-census datasets.

series of uncorrelated linear combinations of the variables and typically contain most of the variance in the dataset.

In this instance, we apply an iterative supervised PCA approach to ensure that components are constructed in reference to the pattern of flows rather than simply reflect the socio-economic dataset alone¹⁹.

The final spatial element in modelling is the introduction of spatial filters to address issues of spatial dependence. It is common for observations to be correlated in terms of time, subgroup clusters or spatial distribution. One means of encompassing spatial dependencies is to specify autoregressive models but another modus operandi is that of eigenvector spatial filtering (ESF). The latter uses a set of synthetic proxy variates, based on some ‘articulation’ (typically a spatial weights matrix) that ties observations together as control variables in a model specification. These controls identify and isolate stochastic dependencies among the observations allowing modelling to proceed ‘as if’ these observations are independent.

The ESF approach uses a mathematical decomposition of the transformed spatial weight matrix **C**:

$$(\mathbf{I} - \mathbf{1}\mathbf{1}^T/n) \mathbf{C} (\mathbf{I} - \mathbf{1}\mathbf{1}^T/n)$$

where **1** is an n-by-1 vector of ones, and T denotes the matrix transpose operator.

The decomposition generates n eigenvectors and eigenvalues. In descending order, the n eigenvalues can be denoted as $\boldsymbol{\lambda} = (\lambda_1, \lambda_2, \lambda_3, \dots, \lambda_n)$ - that is, the eigenvalues range between the largest eigenvalue that is positive, λ_1 , and the smallest eigenvalue that is negative, λ_n . The corresponding n eigenvectors can be denoted as $\mathbf{E} = (\mathbf{E}_1, \mathbf{E}_2, \mathbf{E}_3, \dots, \mathbf{E}_n)$, where each eigenvector, \mathbf{E}_j , is an n-by-1 vector. In matrix notation, the decomposition can be expressed as

$$\mathbf{MCM} = \mathbf{E} \boldsymbol{\Lambda} \mathbf{E}^T$$

where $\mathbf{M} = (\mathbf{I} - \mathbf{1}\mathbf{1}^T/n)$, the projection matrix that centres a variable and $\boldsymbol{\Lambda}$ is an n-by-n diagonal matrix whose diagonal elements are the set of n eigenvalues $(\lambda_1, \lambda_2, \lambda_3, \dots, \lambda_n)$. The eigenfunctions have some important properties:

eigenvectors are orthogonal and uncorrelated as the symmetry of matrix C ensures orthogonality and the projection matrix M ensures eigenvectors with zero means. That is, $\mathbf{E}\mathbf{E}^T = \mathbf{I}$ and $\mathbf{E}\mathbf{T}\mathbf{1} = \mathbf{0}$, and the correlation between any pair of eigenvectors (e.g. \mathbf{E}_i and \mathbf{E}_j) is zero when $i \neq j$;

the eigenvectors themselves portray distinct map patterns. Each eigenvector portrays a different map pattern exhibiting a specified level of spatial correlation when it is mapped onto the areal units associated with the corresponding spatial weight matrix C; and

given a spatial weight matrix, the feasible range of MC values is determined by the largest and smallest eigenvalues; that is, by λ_1 and λ_n .

Based upon these properties, the first eigenvector, \mathbf{E}_1 , is the set of real numbers that has the largest **MC** value achievable by any set of real numbers for the spatial arrangement defined by

¹⁹ Piironen, J., & Vehtari, A. (2018). Iterative Supervised Principal Components. In A. Storkey, & F. Perez-Cruz (Eds.), International Conference on Artificial Intelligence and Statistics, 9-11 April 2018, Playa Blanca, Lanzarote, Canary Islands (Proceedings of Machine Learning Research; Vol. 84). <http://proceedings.mlr.press/v84/piironen18a.html>

the spatial weight matrix \mathbf{C} ; the second eigenvector, \mathbf{E}_2 , is the set of real numbers that has the largest achievable \mathbf{MC} value by any set that is uncorrelated with \mathbf{E}_1 ; the third eigenvector, \mathbf{E}_3 , is the set of real numbers that has the largest achievable \mathbf{MC} value by any set that is uncorrelated with both \mathbf{E}_1 and \mathbf{E}_2 and so on through \mathbf{E}_n . As such, these eigenvectors furnish distinct map pattern descriptions of latent correlation in spatial variables because they are both orthogonal and uncorrelated.

In practice, ESF accounts for spatial correlation with a linear combination of the eigenvectors. As the combination accounts for spatial correlation, the ESF regression specification does not suffer from such correlation in its residuals. In other words, addition of the eigenvectors in the regression equation does not change the expected conditional mean of Y because the mean of each eigenvector is zero.

One complexity of ESFs is that they are not particularly suitable for larger samples. Parameter estimation is computationally demanding and classical ESF requires stepwise eigenvector selection which can be very slow for larger samples. Murakami and Griffith (2019) provide a basis for accelerating large ESF and RE-ESF frameworks with Monte Carlo evidence suggesting that approximation errors for selection of 200 or more eigenvectors are relatively modest²⁰. We implement these routines in our analysis.

²⁰ Murakami, D. and Griffith, D.A. (2019) Eigenvector spatial filtering for large data sets: fixed and random effects approaches. *Geographical Analysis*, 51 (1), 23-49.