



EVALUATION OF THE BIRMINGHAM 2022 COMMONWEALTH GAMES

One Year Post Games Evaluation

Annex 2: Methodological approach

Important Notice

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1 Primary research

1.1 Introduction to primary research

This Annex details the main primary research undertaken by the Games-wide evaluation team, as well as the primary research undertaken by other organisations in liaison with the Games-wide evaluation team and in direct support of the Games-wide evaluation. It does not include details for all primary research conducted by Legacy Programme evaluation teams as part of their Legacy Programme monitoring and evaluation, the results of which were provided to the Games-wide evaluation team as part of Legacy Programme monitoring and reporting, due to the breadth of surveys this includes and the fact the Games-wide evaluation team were not directly involved in these.

The Annex covers:

- Stakeholder engagement;
- Residents Survey;
- Volunteer Survey;
- Business Survey;
- Visitor Survey;
- Perceptions Survey; and
- Spectator Survey.

In addition to the survey limitations detailed in Section 2.5 of the one year post-Games evaluation report, the following more detailed limitations apply to the online surveys undertaken as part of this study:

- Online surveys are representative of online users in the area only, as they require internet access to complete them. It should also be noted that online research, traditionally, has slight underrepresentation from older age groups (65+), and also those in rural areas due to gaps in infrastructure. This is however less relevant for this evaluation, as it was mainly a Birmingham focused study.
- Depth of insight is more limited for online surveys, as respondents tend to quickly complete online surveys, compared to a focus group/ one on one interview where the interviewed can ask follow-up questions.
- Similar to the above, online surveys are predominantly quantitative focussed in order to measure the level of change in opinions, rather than exploring the reasons why respondents gave a certain response.
- Finally, the surveys undertaken as part of this study were undertaken in English. This therefore, might result in potential underrepresentation in portions of the population with limited English language capability. However, it should be noted that this is not a limitation isolated to online methodology, but to the UK research landscape as a whole.

1.2 Stakeholder engagement

As part of the Games-wide evaluation, a series of stakeholder interviews were undertaken in the post-Games period in September and October 2022, and one year post-Games in August and September 2023.

This stakeholder engagement was used to obtain insights to inform the Games-wide evaluation, including insights regarding the impacts of delivery of the Games events as well as the wider legacy activity, in terms of:

- the impacts of the Games on Birmingham and the West Midlands;
- key activities and initiatives that have been most significant in generating the impacts in these areas and wider factors that have influenced or contributed to the impact of the Games;
- any positive or negative unintended outcomes or impacts of the Games; and
- lessons learned from delivery of the Games and Legacy Programmes.

The immediate post-Games stakeholder engagement is documented in Annex 1.3 of the Interim Evaluation Report¹.

As part of the one year post-Games evaluation, a total of 39 stakeholders were engaged to supplement the immediate post-Games stakeholder engagement and to provide insights to inform the understanding of the impact of the Games one year on. Table 1 below shows the broad groups of stakeholders that were engaged and the engagement approach.

Table 1: Stakeholder engagement plan – one year post-Games engagement

Stakeholder group	Approach
Local Government stakeholders: Birmingham City Council (BCC) West Midlands Combined Authority (WMCA) West Midlands Growth Company (WMGC) West Midlands local authorities (LAs)	Interviews with representatives from identified local government stakeholders. 1 to 1.5 hrs
Games partners: BCC, WMCA, the Commonwealth Games Federation (CGF), DCMS, Team England	Interviews with senior Games stakeholders. 1 hrs
Community group stakeholders Representatives from 12 community groups involved in the delivery of the Games and Legacy Programmes.	Focus groups with representatives from identified community stakeholders. 1.5 hrs
Cultural stakeholders Representatives from 6 organisations involved in the delivery of Games-related cultural activities.	Focus groups with representatives from identified cultural stakeholders. 1.5 hrs
Physical activity and Wellbeing stakeholders Representatives from 7 organisations involved in the delivery of Games-related physical activity and wellbeing programmes.	Focus groups with representatives from identified physical activity and wellbeing stakeholders. 1.5 hrs
Transport stakeholders TfWM	Interviews with TfWM representatives. 1 hrs

1.3 Residents Survey

Three waves of a residents survey (the “Residents Survey”) have been undertaken as part of the Games-wide evaluation.

The purpose of the Residents Survey was to understand:

- how residents in the Birmingham, Perry Barr and Sandwell communities feel about their local area, for example in terms of community cohesion, inclusion and civic pride;
- their participation in physical, creative and cultural activities;

¹ HM Government, 2023. Interim evaluation of Birmingham 2022 Commonwealth Games. Annex 1.3 Methodological Approach. See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1128693/Interim_Evaluation_of_the_Birmingham_2022_Commonwealth_Games_-_Annex_1.3.pdf

- their use of different modes of transport and active travel; and
- their awareness of and engagement with the Games, and their experience of the impacts of the Games.

The first wave of the Residents Survey was in the field from 16th June 2021 to 9th July 2021, the second wave was in the field from 17th August 2022 to 11th September 2022 and the third wave was in the field from 16th August 2023 to 10th September 2023.

Approach

The survey was deployed using KPMG’s Partner panel provider, Dynata. Residents within the targeted areas of Birmingham and Sandwell were invited to participate in the c.15 minute online survey via email.

Survey sample

The sample for the Residents Survey was designed to be as representative as possible of the Birmingham area, with minimum quotas only applied to achieve robust sample sizes for the priority groups of interest for the evaluation. All sample sizes are considered to provide reliable results, though we note that sample sizes of 50 should be treated with some caution.

Target quotas for each wave were set as follows:

Table 2: Sample Quotas

Birmingham Main Sample	n=500	Incl: Min n=100 16-30 year olds Min n=100 BAME
Perry Bar Sample	n=50	
Sandwell Sample	n=50	

Source: KPMG Resident Survey Sample Data

In some instances, the target quotas were slightly exceeded and these additional responses have been included in the results for extra robustness.

Table 3: Residents Response Volumes

	Wave 1 – Pre-Games	Wave 2 - Immediately post-Games	Wave 3 – One year post-Games
Birmingham	500	500	504
Perry Barr	53	64	51
Sandwell	55	72	50

Source: KPMG Resident Survey Sample Data

1.4 Volunteer Survey

Three waves of the volunteer survey (the “Volunteer Survey”) have been undertaken as part of the Games-wide evaluation, in collaboration with the OC and BCC.

The purpose of the Volunteer Survey was to capture the data on the short and longer-term impacts on Games volunteers of their participation in the volunteering programme, including in terms of:

- personal benefits from volunteering, such as any changes in levels of confidence, skills development, preparedness for work, other social benefits;
- employment status pre-Games and over the post-Games period; and

- wider volunteering activity pre-Games and over the post-Games period and use of the Volunteers Collective Legacy Platform².

The first wave of the survey was in the field pre-Games from 16th May 2022 to early July 2022 once volunteers had been recruited but ahead of the Games events, and included questions about experiences prior to being onboarded to the volunteering programme.

The second wave of the survey was in the field post-Games from 27th September 2022 to 10th October 2022 and the third wave was in the field from 21st August 2023 to 22nd September 2023. Post-Games surveys focussed on reflections of the Games volunteering experience (wave 2), the impact volunteering has had on their life (wave 2 and 3) and subsequent usage of the volunteering portal (wave 3).

Approach

The survey took the form of a c. 10 minute online survey which all registered volunteers were invited to participate in.

Survey sample

The surveys went out to all registered volunteers (estimated distribution of around 12,000 volunteers). Completed survey volumes are shown in Table 4 below.

Table 4: Volunteer Response Volumes

	Total Response volume
Wave 1 - Pre-Games	n=4,047
Wave 2 - Immediately post-Games	n=1,669
Wave 3 – One year post-Games	n=1,780

1.5 Business Survey

Two waves of local businesses and Games suppliers (“the Business Survey”) have been undertaken as part of the Games-wide evaluation.

The purpose of the Business Survey was to obtain data and insights in relation to the impact of the Games across a range of issues including in relation to:

- how the Games has impacted business investment decisions, before, during and/ or after the Games;
- how the Games has impacted businesses, including in terms of required employment levels, sales and revenues, and the extent to which any Games-time impacts have been sustained post-Games;
- perceptions of the strength of the region as a good place for doing business, including in relation to skills and infrastructure; and
- behavioural change as a result of the Games including in relation to practices relating to accessibility, EDI, environmental sustainability and social value generation.

The purpose of the survey was to provide insights on the nature of impacts rather than to be used as part of the quantitative analysis of economic impacts.

² United By 2022, supported by Spirit of 2012, launched the ‘Volunteers Collective’, a new digital match-making service that coordinates people looking for volunteering opportunities with organisations looking for volunteers.

The Business Survey was undertaken in two waves – immediately post-Games and one year post-Games. The first wave was in the field from 26th August 2022 to 13th October 2022 and the second wave was in the field from 17th August 2023 to 19th September 2023.

Approach

The survey took the form of an approximately 10 minute online survey distributed via email to:

- A panel sample of West Midlands businesses
- OC suppliers

Survey sample

The first wave received 195 responses and the second wave 137 responses.

Table 5: Sample breakdown by area

		Wave 1 (Immediately post-Games)	Wave 2 (One year post- Games)
Source	Panel	103	110
	Direct sample	92	27
Location of business	West Midlands	159	120
	Non-West Midlands	36	17
Games contract holders	Direct contract	86	50
	Supply chain, no contract or don't know	109	87

Source: KPMG Business sample data

Given the sample sizes achieved for the Business Survey the findings should be considered indicative only and not representative of all businesses that could have been impacted by the Games.

1.6 Visitor Survey

A visitor survey was commissioned by WMGC as part of the Business and Tourism Legacy Programme and undertaken by Echo Research (“the Visitor Survey”).

The purpose of the Visitor Survey was to capture data on factors including:

- demographic characteristics of the visitors;
- motivations for visiting/ journey purpose (including the extent to which the visit was driven by the Games, associated events/ programmes of activity such as the Queen’s Platinum Jubilee events, or wider factors);
- length of stay;
- location and type of accommodation;
- origin of travel (elsewhere in the UK/ overseas);
- modes of transport used for the visit;
- visitor expenditure; and
- displacement - whether visits have taken place instead of ones to other parts of the UK or visits at other times of the year.

The evaluation draws on data collected via the survey over the 12 days of the Games events, from 28th July 2022 to 8th August 2022, and one-year post Games, from July to September 2023.

Approach

The survey was conducted as a c.10 minute face-to-face survey in locations around Birmingham and the West Midlands. The Games-time survey undertaken in 2022 was also conducted in locations around the Games venues detailed in the table below:

Table 6: Games survey locations

Location	Games venue
Birmingham	Perry Barr Station/ Alexander Stadium
Birmingham	Edgbaston Stadium
Birmingham	Victoria Square
Coventry	Coventry Building Society Arena
Solihull	NEC Exhibition Halls and Arena
Wolverhampton	West Park
Warwickshire	St Nicholas Park, Warwick
Warwickshire	Victoria Park - Leamington Spa
Staffordshire & Worcestershire	Cannock Chase Forest

Source: Echo Research

Survey sample

The focus of the survey was non-residents of the unitary authority area in which the survey location was based. The total sample achieved over the wave 1 survey period was 1,026 visitors, of which 440 were at Games venues and 586 were at other sites across the West Midlands. For wave 2 a sample of 1,455 visitors was achieved.

1.7 Perceptions Survey

A survey of UK and international leisure travellers and trade and tourism intermediaries was commissioned by WMGC as part of the Business and Tourism Legacy Programme and undertaken by Echo Research (“the Perceptions Survey”).

The purpose of the Perceptions Survey was to collect data from leisure travellers (including domestic and international leisure travellers) and intermediaries (including travel trade professionals, conference organisers, sporting event organisers, and investment intermediaries) on the awareness and perceptions of Birmingham, the West Midlands and the UK.

The evaluation draws on data collected via three waves of surveys of:

- leisure travellers, where wave 1 was conducted between 6th October and 13th October 2021, wave 2 from 8th August to 25th August 2022 and wave 3 from 17th July to 28th July 2023; and
- intermediaries, where wave 1 was conducted between 22nd September and 18th November 2021, wave 2 from 25th July to 12th October 2022 and wave 3 from 5th June to 18th August 2023.

Approach

The survey of leisure travellers was a c. 15 minute online survey, while the survey of intermediaries was a c. 30 minute telephone interview.

Survey sample

	Leisure travellers	Intermediaries
Wave 1 – 2021	n=2,020	n=100
Wave 2 - 2022	n=2,030	n=101
Wave 3 – 2023	n=2,029	n=100

1.8 Spectator Survey

A post-Games spectator survey (“the Spectator Survey”) was undertaken by the OC to collect information from those individuals that had purchased tickets for the Games on their Games experience, as well as to obtain data to inform the economic impact analysis in the Games-wide evaluation, specifically in relation to:

- the Games events for which tickets were purchased;
- location of residence;
- visitor expenditure; and
- displacement - whether visits have taken place instead of ones to other parts of the UK or visits at other times of the year.

The survey was in the field post-Games from 11th August 2022 to 21st August 2022.

Approach

The survey was sent by the OC via email to all the email addresses of those who had purchased tickets for the Games via Ticketmaster.

Survey sample

A total sample of 23,486 was achieved for this survey. Of these respondents, 1,263 did not attend a Games event.

This resulted in a total sample of ticket purchasers who attended the Games of 22,223, of whom

- 10,472 were West Midlands residents;
- 11,555 were from elsewhere in the UK; and
- 196 were from overseas.

2 Approach to estimating the economic impacts associated with the delivery of the B2022 Commonwealth Games sporting events and Legacy Programmes

2.1 Background

The Birmingham 2022 Commonwealth Games (“the Games”) Pre-Games Evaluation Framework and Baseline Report was published in November 2021³ (the “Evaluation Framework”) and the Games Interim Evaluation Report was published in January 2023⁴ (the “Interim Report”).

The Evaluation Framework sets out the overall methodology, including approaches to data collection and analysis, for the Games-wide evaluation.

The Interim Report, and specifically the Methodological Approach Annex⁵, sets out the overall methodology, including approaches to data collection and analysis, for the interim evaluation of the Birmingham 2022 Commonwealth Games.

As detailed in the Framework Evaluation, the methodologies employed over the course of the evaluation were based on recognised economic impact analysis methodologies, such as those set out in HM Treasury’s Green Book⁶, approaches specified by the Office for National Statistics (“ONS”)^{7,8} and specific methodologies for measuring the impact of events, such as in the guidance produced by eventIMPACTS⁹.

This Technical Annex builds on the Evaluation Framework and the Interim Report’s Methodological Approach Annex, and provides additional detail on the approaches that were followed as part of the one year post-Games Evaluation of the B2022 Commonwealth Games, specifically the approaches taken to assess the outcomes and impacts generated through the delivery of the Games events themselves i.e. the Opening Ceremony and 11 days of sporting events (“the Games events”), and the wider legacy activity.

³ HM Government, 2021. Birmingham 2022 Commonwealth Games Pre-Games Evaluation Framework and Baseline Report. November 2021. See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033734/Birmingham_2022_Pre-Games_Evaluation_Framework_and_Baseline_Report.pdf

⁴ HM Government, 2023. Interim evaluation of Birmingham 2022 Commonwealth Games. See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1128687/Interim_Evaluation_of_the_Birmingham_2022_Commonwealth_Games_-_Interim_Evaluation_Report.pdf

⁵ HM Government, 2023. Interim evaluation of Birmingham 2022 Commonwealth Games. Annex 1.3 Methodological Approach. See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1128693/Interim_Evaluation_of_the_Birmingham_2022_Commonwealth_Games_-_Annex_1.3.pdf

⁶ HM Treasury (2020) The Green Book; See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938046/The_Green_Book_2_020.pdf

⁷ [UK input-output analytical tables - product by product - Office for National Statistics \(ons.gov.uk\)](https://ons.gov.uk/methods/analytical-tables)

⁸ [Regional gross value added \(income approach\) QMI - Office for National Statistics \(ons.gov.uk\)](https://ons.gov.uk/methods/analytical-tables)

⁹ eventIMPACTS Social Measures toolkit. Sourced from: <http://www.eventimpacts.com/~media/event-impacts/downloadableresources/social/social-measurescomplete-toolkit.pdf?la=en>

2.2 Introduction to the economic impacts assessed

The economic impacts associated with the delivery of the Games events and wider legacy activity were estimated in terms of:

- **Direct economic impacts** arising as a result of direct activity undertaken to deliver the Games events and wider legacy activity, including:
 - the activity of the Organising Committee (OC) to deliver the Games events;
 - the activity of the OC, West Midlands Combined Authority (WMCA), Birmingham City Council (BCC) and Sport England (herein referred to as “the organisations that delivered the Legacy Programmes”) to deliver the Legacy Programmes;
 - the activity of contractors engaged to redevelop Alexander Stadium;
 - the activity of contractors engaged to construct and fit out Sandwell Aquatics Centre;
 - the activity of contractors engaged to deliver the accelerated regeneration of Perry Barr; and
 - the activity of Transport for West Midlands (TfWM) and contractors to provide Games-related transport services.
- **Indirect economic impacts** as a result of spending with suppliers to the OC and those providing goods and services as inputs to the delivery of the Legacy Programmes, the redevelopment of Alexander Stadium, the construction of Sandwell Aquatics Centre, the accelerated regeneration of Perry Barr, the provision of Games-related transport services, as well as the wider supply chains supporting this activity. This supplier spending generated economic activity within the full UK supply chain to produce the goods and services used to deliver the Games, generating indirect employment and GVA in the UK economy as result.
- **Induced economic impacts** generated as a result of spending of wages in the UK economy by those directly and indirectly employed as a result of the delivery of the Games events and Legacy Programmes. This spending generates additional economic activity for those businesses from which these employees buy goods and services as well as in the UK supply chains for these businesses, generating associated induced employment and GVA.

It should be noted that the spend data received from the OC, BCC, Sandwell Metropolitan Borough Council (SMBC), WMCA and TfWM, as referred to throughout the methodology, was inflated to 2023 prices using the ONS UK GDP deflators for FY 2017/18 to FY 2023/24.¹⁰

It also should be noted that:

- The data received from the OC covers the OC payroll costs and the OC procurement spend between FY 2018/19 and FY 2022/23.
- The data received from SMBC covers the project costs associated with the construction of the Sandwell Aquatics Centre between FY 2018/19 and FY 2023/24. SMBC provided this data on an annual basis up to and including FY 2023/24. Therefore, in the absence of monthly data, data for the overall year was used.
- For the construction of the Sandwell Aquatics Centre, SMBC contracted mainly with one contractor (here referred as the “main contractor”), spending 95% of the total project cost with them. Given the significant role of the main contractor in the construction of the Sandwell Aquatics Centre, data relating to the main contractor spend with its own supply chain was provided as part of this study.
- The data received from BCC covers the total project costs associated with:
 - the redevelopment of Alexander Stadium between FY 2018/19 and Q2 2023/24 (herein referred to as FY 2023/24); and
 - the accelerated regeneration of Perry Barr between FY 2017/18 and Q2 2023/24.

¹⁰ ONS, ‘GDP deflators at market prices, and money GDP September 2023 (Quarterly National Accounts)’. See: <https://www.gov.uk/government/statistics/gdp-deflators-at-market-prices-and-money-gdp-september-2023-quarterly-national-accounts>

- The data received from TfWM covers the period between FY 2018/19 and FY 2022/23.
- The data received from the organisations that delivered the Legacy Programmes covers expenditure incurred over the period between FY 2020/21 and Q2 FY 2023/24.

2.2.1 Approach to estimating net impacts

GVA and employment impacts are reported in net terms, accounting for activity/spend that would have happened anyway (*deadweight*) or that would have happened instead (*displacement*), had the Games events not taken place in the West Midlands.

In relation to the delivery of the construction of Sandwell Aquatics Centre, estimated net impacts take account of plans, and associated planned expenditure, by SMBC to invest in a new leisure centre, which were subsequently replaced by the plans and expenditure on the new Aquatics Centre.

To estimate the net impacts, the gross GVA and employment impacts generated through the construction of the Sandwell Aquatics Centre were scaled down using the following ratio:

Scale down ratio:

$$1 - \frac{\text{SMBC spend that would have happened anyway to construct a new leisure centre}}{\text{Total SMBC spend to construct the Sandwell Aquatics Centre}}$$

In relation to the regeneration of Perry Barr, estimated net impacts take account of plans by BCC to regenerate the neighbourhood, which were brought three years forward due to Birmingham hosting the Games. The Games-wide evaluation team understands from stakeholder engagement that this was the likely counterfactual timescale for the Perry Barr regeneration had the Games not been hosted in Birmingham.

Therefore, the net impacts capture the difference between the impacts generated by the spend incurred in the period between FY 2017/18 and FY 2023/24, and the impacts that would have been generated had the regeneration started three years later over the period between FY 2020/21 and FY 2026/27.

All other spending related to the delivery of the Games events and wider legacy activity was considered additional, and therefore, was not scaled in the analysis.

The results of the analysis presented in the one year post-Games Evaluation account for leakage of impacts outside the relevant area of interest but do not account for any knock-on displacement and substitution effects, nor do they adjust for any changes in the structure of the economy over time. This approach is consistent with the analysis of GVA and employment economic impacts reported in the CGF Games Values Framework.¹¹

2.2.2 Approach to direct GVA impact calculations

Direct GVA was generated as a result of direct activity undertaken to deliver the Games events and wider legacy activity, including activity by the OC to deliver the Games, activity by the organisations that delivered the Legacy Programmes, activity of BCC and contractors engaged to redevelop Alexander Stadium and to regenerate Perry Barr, activity of SMBC and contractors to construct and fit out Sandwell Aquatics Centre, and the activity of TfWM and contractors to provide Games-related transport services.

¹¹ See: https://thecgf.com/sites/default/files/2020-05/CG_Value_Framework_v1.pdf

Direct GVA at the industry or organisational level can be measured through either the income approach or the production approach.¹²

To estimate the direct GVA generated by the OC to deliver the Games and the direct GVA generated as a result of the delivery of the Legacy Programmes, the analysis used the income approach to estimation, where:

$$\text{Direct GVA} = \text{Net pre-tax profit} + \text{Compensation of Employees} + \text{Depreciation} + \text{Amortisation}$$

Given that the OC and the organisations that delivered the Legacy Programmes are non-profit making, using the formula above the direct GVA was estimated based on compensation of employees. The data for the OC was provided by the OC from its payroll system, covering compensation of employees over the period FY 2018/19 to FY 2022/23, while the organisations that delivered the Legacy programmes provided staff cost data for the period between FY 2020/21 and FY 2023/24.

The direct GVA impact generated by the activities of the main contractor engaged to deliver the construction of Sandwell Aquatics Centre was estimated based on the main contractor's net pre-tax profit and compensation of employees associated with the construction of the Sandwell Aquatics Centre.

To estimate the direct GVA generated through the activity of BCC and contractors engaged to redevelop Alexander Stadium and regenerate Perry Barr, activity of SMBC and contractors (excluding activities of the main contractor) to construct and fit out Sandwell Aquatics Centre, the activity of TfWM and contractors to provide Games-related transport services, data on the spend with contractors was used.

BCC, SMBC, and TfWM separately provided data on their contractors spend over the period between FY 2017/18 and FY 2023/24. The data provided covered:

- the annual spend by contractor;
- the contractors' geographic location based on postcode; and
- an indication of the industry of the contractor.¹³

Based on the information on the industry of contractor, Standard Industrial Classification (SIC) codes¹⁴ were assigned to each contractor.

The contractor spend was then converted into GVA using the relevant industry specific GVA to Output ratio sourced from the ONS¹⁵.

$$\text{Direct GVA} = \sum_{i=1}^n \text{contractor spend for sector } i * (\text{GVA to output ratio for sector } i)$$

The total direct GVA associated with the delivery of the Games events and wider legacy activity was then estimated by summing the direct GVA generated by the OC, the organisations that delivered the Legacy Programmes, the main contractor engaged to construct and fit out Sandwell Aquatics Centre,

¹² ONS, 'Measuring the economic impact of an intervention, Paper One', 2010. Available from: <http://webarchive.nationalarchives.gov.uk/20160105160709/http://ons.gov.uk/ons/rel/regional-analysis/measuring-the-economic-impact-of-an-intervention-or-investment/measuring-the-economic-impact-of-an-intervention-or-investment/economic-impact-paper-one.pdf>

¹³ It should be noted that the level of detail provided regarding the information on the industry of the contractors and their geographic location varied across the datasets provided by the three organisations.

¹⁴ See: <https://www.ons.gov.uk/methodology/classificationsandstandards/ukstandardindustrialclassificationofeconomicactivities/uksic2007>

¹⁵ ONS (2019) [Input-output supply and use tables](#)

the contractors engaged to redevelop Alexander Stadium and regenerate Perry Barr, and the activity of TfWM and contractors to provide Games-related transport services.

2.2.3 Approach to indirect GVA impact calculations

The indirect GVA impacts referred to in the report consist of:

- The indirect GVA impact generated by the direct suppliers that the OC contracted with to deliver the Games events, and the indirect GVA impact generated by the direct suppliers' own UK supply chain.
- The indirect GVA generated by direct suppliers that the organisations that delivered the Legacy Programmes contracted with, and the indirect GVA impact generated by the direct suppliers' own UK supply chain.
- The indirect GVA generated by the UK supply chains of the contractors engaged to redevelop Alexander Stadium, to regenerate Perry Barr, to construct and fit out Sandwell Aquatics Centre (excluding the main contractor engaged to construct the Sandwell Aquatics Centre), and to provide Games-related transport services.

To inform the analysis of the indirect impacts generated through the OC procurement spend, the OC provided data on its supplier spend between FY 2018/19 and FY 2022/23, including the category of spend¹⁶, the level of spend with each supplier and the location of the suppliers based on postcodes. It should be noted that the geographic analysis of the OC's supply chain, and the indirect impacts associated with this, is based on OC procurement data and the invoicing postcode of the OC's direct (tier 1) suppliers. It is likely that the invoicing address is not fully representative of the geographic location in which supplier activity took place. This may have some effect on the results of our geographic analysis, likely skewing it toward locations in which businesses tend to be headquartered. To account for OC spend for which granular supplier data was not available, the analysis was scaled up to reflect the total spend the OC incurred with suppliers to deliver the Games events.

The indirect impacts generated as a result of the delivery of Legacy Programmes were estimated using the expenditure data for the period between FY 2020/21 to FY 2023/24 provided by the organisations that delivered the Legacy Programmes. It should be noted that for some of the Legacy Programmes (Community Cohesion, Inclusion, Civic Pride (CCICP); Jobs and Skills; and Physical Activity and Wellbeing), the expenditure data provided only included details of the type of spend incurred, and no information on the geographic location of the suppliers was provided.

However, for the Business and Tourism Programme (BATP), the Culture Programme, and the Youth and Learning Programme, detailed information on the tier 1 supply chain spend (including category of spend, and location of supplier) was provided. The Culture and Youth and Learning Programmes were both led by the OC, and their respective detailed supply chain information was provided by the OC as part of the OC data submission. For the BATP, WMCA provided detailed procurement spend incurred to deliver the programme.

As the OC and most of the organisations that delivered the Legacy Programmes were unable to provide the relevant SIC code for each supplier, each category of spend was assigned to a SIC code based on the nature of the spend.

The indirect GVA associated with the spend with direct suppliers to the OC and the organisations that delivered the Legacy Programmes (indirect tier 1 GVA) was estimated by converting the spend into GVA using the relevant industry specific GVA to Output ratio sourced from the ONS¹⁷.

Indirect tier 1 GVA generated by direct suppliers to the OC and the organisations that delivered the

¹⁶ This refers to the type of expenditure incurred e.g. 'Printing & Stationery'.

¹⁷ ONS (2019) [Input-output supply and use tables](#)

$$\text{Legacy Programmes} = \sum_{i=1}^n \text{Tier 1 supplier spend for sector } i * (\text{GVA to output ratio for sector } i)$$

To estimate the indirect GVA associated with the wider supply chain, beyond the tier 1 suppliers, the relevant industry specific GVA multipliers from the ONS¹⁸ were applied to the indirect tier 1 GVA, based on the SIC code of the supplier.

Indirect wider supply chain GVA generated through activities by the OC and the organisations that delivered the Legacy Programmes

$$= \sum_{i=1}^n \text{Indirect tier 1 GVA for sector } i * (\text{Type I GVA multiplier for sector } i - 1)$$

The indirect GVA for tier 1 suppliers was then summed with the wider supply chain indirect GVA.

The indirect impacts generated by the supply chain of the contractors engaged to redevelop Alexander Stadium, to regenerate Perry Barr, and provide Games-related transport services were estimated by applying the relevant industry specific GVA multipliers from the ONS to the estimated direct GVA (see Section 2.2.2), based on the SIC code of the contractor.

Indirect GVA generated through BCC and TfWM and contractors' supply chain activities

$$= \sum_{i=1}^n \text{Direct GVA generated through BCC and TfWM and contractors' activities for sector } i * (\text{Type I GVA multiplier for sector } i - 1)$$

This approach was also used to estimate the indirect impacts associated with the supply chain for the construction of the Sandwell Aquatics Centre where the details of the tier 1 suppliers were not known. However, where details of the tier 1 suppliers of the main contractor engaged to construct Sandwell Aquatics Centre were available, an approach aligned to the one used to estimate the indirect impacts generated through the activities of the OC and the organisations that delivered the Legacy Programmes was applied.

The total indirect GVA associated with the delivery of the Games events and Legacy Programmes was then estimated by summing each of the areas of indirect GVA detailed above.

2.2.4 Approach to induced GVA impact calculations

Induced GVA was estimated using Type II GVA multipliers derived from the ONS Input-Output tables.

Typically, Type II multipliers are applied to direct GVA and estimate the total indirect and induced GVA impact. Therefore, to arrive to the induced GVA, the indirect GVA (based on the Type I multiplier) would be removed from the estimate.

$$\text{Induced GVA} = \sum_{i=1}^n \text{Direct GVA for sector } i * (\text{Type II GVA multiplier for sector } i - \text{Type I GVA multiplier for sector } i)$$

Reflecting the approach to calculating indirect GVA (based on input output modelling without bespoke supplier analysis) induced GVA impacts generated through the activities of BCC, TfWM, SMBC and their contractors (excluding activities carried out by SMBC's main contractor engaged to deliver the

¹⁸ ONS, 2015 [Input-Output Analytical Tables, Multipliers and effects \(product\)](#)

construction of the Sandwell Aquatics Centre, which is covered below), and the activities of their supply chains, was estimated by applying the formula above.

For the OC, the organisations that delivered the Legacy Programmes and the main contractor engaged in the construction of the Sandwell Aquatics Centre, where details of the tier 1 suppliers were known, the induced GVA relating to the direct activities was estimated separately from that relating to the supply chain (tier 1 and wider supply chain).

In order to estimate the induced GVA impacts generated through the direct activities of the OC, the organisations that delivered the Legacy Programmes and the main contractor engaged in the construction of the Sandwell Aquatics Centre, the total induced GVA was first estimated based on the Type II GVA multiplier through the equation above.

The estimated induced GVA was then scaled down to remove the element that relates to induced GVA from supply chain activity:

$$\text{Scale down factor} = \frac{1}{\text{Sector specific Type I GVA multiplier}}$$

The induced GVA impacts generated through the supply chain to the OC, the organisations that delivered the Legacy Programmes, and the main contractor engaged in the construction of the Sandwell Aquatics Centre, were estimated by applying the sector specific Type II GVA multipliers to the estimated sector specific indirect tier 1 GVA impacts (see Section 2.2.3).

The total induced GVA associated with the delivery of the Games events and wider legacy activity was then estimated by summing each of the areas of induced GVA detailed above.

2.3 Approach to employment impact calculations

The methodology for estimating employment impacts mirrors those for GVA, but uses employment multipliers from the ONS Input-Output tables rather than GVA multipliers. Throughout the report, employment is measured in:

- Full Time Equivalent (FTE) terms: this adjusts part time or temporary staff into annual full-time equivalents based on the proportion of full-time hours worked over a year; and
- FTE years of employment: this refers to the number of FTE jobs lasting an equivalent of one year supported over the period assessed.

2.3.1 Approach to direct employment impact calculations

The OC direct employment was sourced directly from the OC, as was the direct employment at the organisations that delivered the Legacy Programmes.

The OC and the organisations that delivered the Legacy Programmes provided data on the number of staff (both in headcount and FTE terms) employed over the period between FY 2018/19 and FY 2023/24. It should be noted that the FTE figures were also adjusted for the length of employment of individuals to capture annual FTEs.

Data on the number of direct employees working on the redevelopment of Alexander Stadium, the accelerated regeneration of Perry Barr, the construction of Sandwell Aquatics Centre, and the provision of Games-related transport services was not available for this evaluation. Therefore, direct employment associated with these projects was estimated using the estimated direct GVA associated

with these activities. The sector specific GVA per FTE¹⁹ ratios were applied to the direct GVA generated through BCC, SMBC, TfWM and contractors' activities (see Section 2.2.2).

Direct employment generated through BCC, SMBC, TfWM and contractors' activities

$$= \sum_{i=1}^n \text{Direct GVA generated through BCC, SMBC, TfWM and contractors' activities for sector } i \\ * (\text{GVA per FTE ratio for sector } i)$$

The total direct employment associated with the delivery of the Games events and wider legacy activity was estimated by summing direct employment from the OC and the organisations that delivered the Legacy Programmes, and the direct employment generated through BCC, SMBC, TfWM and contractors' activities.

2.3.2 Approach to indirect employment impact calculations

As with the approach to estimating indirect GVA impacts, the approach to estimating indirect employment varies dependent on the data available on the tier 1 suppliers supporting the direct activity.

The employment impacts in the tier 1 supply chain of the OC, of the organisations that delivered the Legacy Programmes and of the main contractor engaged to construct Sandwell Aquatics Centre were estimated based on the estimated indirect tier 1 GVA impacts (estimated using the approaches set out in Section 2.2.3). These indirect GVA impacts were converted into FTEs using industry specific GVA per FTE ratios.

Employment in the wider supply chains of the OC, of the organisations that delivered the Legacy Programmes and of the main contractor engaged to construct the Sandwell Aquatics Centre were estimated by taking the estimated employment for tier 1 suppliers and applying the applicable industry's Type 1 employment multiplier. The indirect employment generated through the activities of the OC, of the organisations that delivered the Legacy Programmes, and of the main contractor engaged to construct the Sandwell Aquatics Centre was estimated as follows:

$$\text{Indirect Tier 1 employment} = \sum_{i=1}^n \text{Indirect tier 1 GVA for sector } i * (\text{GVA per FTE ratio for sector } i)$$

Indirect wider supply chain employment

$$= \sum_{i=1}^n \text{Indirect tier 1 employment for sector } i \\ * (\text{Type 1 employment multiplier for sector } i - 1)$$

Indirect employment = Indirect Tier 1 employment + Indirect wider supply chain employment

Indirect employment associated with the redevelopment of Alexander stadium, the accelerated regeneration of Perry Barr, the provision of Games-related transport services, and the construction of Sandwell Aquatics Centre (excluding activities carried out by SMBC's main contractor engaged to deliver the construction of the Sandwell Aquatics Centre, which is covered above) was estimated by

¹⁹ Data sourced from the ONS was used to estimate sector-level GVA per FTE ratio. Specifically, data on number of FTEs per £1m of output is available at a sector level was sourced from the latest (2019) FTE multipliers and effects (See: <https://www.ons.gov.uk/economy/nationalaccounts/supplyandusetables/adhocs/1254ftemultipliersandeffectsreferenceyear2019>). Data on number of FTEs per £1m of output was then combined with the GVA to Output ratio sourced from the UK input-output analytical tables, industry by industry (See: <https://www.ons.gov.uk/economy/nationalaccounts/supplyandusetables/datasets/ukinputoutputanalyticaltablesindustrybyindustry>). Together, these were used to estimate the sector level GVA per FTE ratios.

taking the estimated direct employment associated with these projects and applying the applicable industry's Type I employment multiplier.

The total indirect employment associated with the delivery of the Games events and Legacy Programmes was estimated by summing each of the areas of indirect employment detailed above.

2.3.3 Approach to induced employment impact calculations

The delivery of the Birmingham 2022 Games events and wider legacy activity also generated induced employment in the UK economy. This was generated through the OC employees, the employees at the organisations that delivered the Legacy Programmes, and those employed for the delivery of the Sandwell Aquatics Centre and Alexander Stadium, the accelerated regeneration of Perry Barr and the delivery of Games-related transport services, as well as the employees supported in the supply chains associated with these, spending a proportion of their wages on UK goods and services.

Induced employment generated through the activities of BCC, SMBC, and TfWM and their contractors (excluding activities carried out by SMBC's main contractor engaged to deliver the construction of the Sandwell Aquatics Centre, which is covered below), and the activities of their supply chains, was estimated by applying sector specific Type II employment multipliers to the estimated direct employment relating to these activities.

Induced employment generated through the spend of the direct employees of the OC, of the organisations that delivered the Legacy Programmes, and the main contractor engaged in the construction of the Sandwell Aquatics Centre was estimated by applying the sector specific Type II employment multipliers to the estimated direct employment relating to these elements, and then scaled down by the following factor (similar to that used in the estimation of induced GVA - see Section 2.2.4):

$$\text{Scale down factor} = \frac{1}{\text{Sector specific Type I employment multiplier}}$$

The induced employment impacts generated by the wage spending of those employed in the supply chains to the OC, to the organisations that delivered the Legacy Programmes and to the main contractor engaged in the construction of the Sandwell Aquatics Centre, were estimated by applying the sector specific Type II GVA multipliers to the estimated indirect tier 1 employment (see Section 2.3.2).

The total induced employment associated with the delivery of the Games events and wider legacy activity was estimated by summing each of the areas of induced employment detailed above.

2.4 Approach to regional impact calculations

The geographic distribution of the estimated GVA and employment effects associated with the delivery of the Games events and wider legacy activity were estimated to report the impacts at the Birmingham, West Midlands and UK levels.

The OC provided details of the geographic location associated with its own activities and the invoicing address of its tier 1 suppliers.

BCC, SMBC and TfWM also provided details of the contractors delivering the development of Alexander Stadium, the accelerated regeneration of Perry Barr, the construction and fit out of the Sandwell Aquatics Centre, and the provision of Games-related transport services. These details were then used by the Games-wide evaluation team to understand the geographic location of the contractors. The main contractor engaged to construct the Sandwell Aquatics Centre also provided details of the invoicing address of its tier 1 suppliers.

In relation to the Legacy Programmes, while information on the location associated with the direct activity undertaken by the organisations that delivered the Legacy Programmes was provided, information on the location of the tier 1 supply chain was not always available.

The OC and WMCA provided details of the geographic location of the direct supply chain to the Culture, Youth and Learning, and the BATP programmes.

However, data provided for the following Legacy Programmes (CCICP, Jobs and Skills, and Physical Activity and Wellbeing) did not include details of the geographic locations of their suppliers. As such, it was not possible to determine the geographic location in which the associated estimated indirect GVA and employment impacts were generated.

Where the geographic data was provided, it was used to determine the locations in which the associated GVA and employment impacts were generated. Based on this, the Games-wide evaluation team determined the geographic locations in which the direct impacts were generated and the indirect impacts associated with the OC's tier 1 suppliers, the tier 1 suppliers to the BATP, Culture, and Youth and Learning Legacy Programmes, and the tier 1 suppliers of the main contractor engaged to construct the Sandwell Aquatics Centre. The geographic distributions of the wider supply chain impacts across Birmingham, the West Midlands and the UK were estimated based on input-output modelling of the industrial sector breakdown of the wider supply activity and the geographic dispersion of these input sectors across the UK.

Specifically, the regional analysis was produced using a bespoke localised input-output modelling approach that adapts the national level input-output tables to reflect the ratios of local level economic activity to national level economic activity, at the sector level. This is based on the widely used approach developed by the academics Flegg and Webber.²⁰

²⁰ See: Flegg and Webber. 2000. 'Regional Size, Regional Specialization and the FLQ Formula'. *Regional Studies*. 34(6): 563-569.

ONS 2017 Input-Output Analytical Tables, Multipliers and effects. Available at:
<https://www.ons.gov.uk/economy/nationalaccounts/supplyandusetables/datasets/ukinputoutputanalyticaltablesdownload>

3 Approach to estimating the short-term economic impacts generated through attracting visitors to the West Midlands

3.1 Introduction

This Section details the methodological approach followed to estimate the short-term economic impacts generated through the spending of visitors to Birmingham and the West Midlands over the period between 28th July 2022 and 8th August 2022 when the Birmingham 2022 Commonwealth Games took place.

It should be noted that this analysis was undertaken as part of the Interim Evaluation²¹, and its results have also been reported in the one year post-Games evaluation. As such, the methodology presented in this Section is the same as the one presented in Annex 1.3 of the Interim Report.²² The results reported in the one year post-Games evaluation report correspond to the figures presented in the Interim Evaluation, with the only change made being inflating the figures to 2023 prices using the ONS UK GDP deflators.²³

3.2 Data sources

To analyse the economic impacts generated by the spend incurred by the visitors to the West Midlands associated with the Birmingham 2022 Games events, evidence from two key surveys was used. These provided data and information to enable the analysis of the additional expenditure, and associated economic impact, of Games-related visitors²⁴.

These two surveys were:

- the Visitor Survey commissioned by WMGC carried out on the ground in and around key Games venues and other visitor locations across the West Midlands with a sample of 1,026 visitors to the area, in the field from 28th July 2022 to 8th August 2022; and
- the Spectator Survey - a post-Games online survey of those who purchased tickets through Ticketmaster commissioned by the OC, with a sample of over 22,000 ticket holders, in the field from 11th August 2022 to 21st August 2022.

Details of the WMGC Visitor Survey and the OC Spectator Survey are provided in Section 1 of this Annex.

²¹ HM Government, 2023. Interim evaluation of Birmingham 2022 Commonwealth Games. See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1128687/Interim_Evaluation_of_the_Birmingham_2022_Commonwealth_Games_-_Interim_Evaluation_Report.pdf

²² HM Government, 2023. Interim evaluation of Birmingham 2022 Commonwealth Games. Annex 1.3 Methodological Approach. See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1128693/Interim_Evaluation_of_the_Birmingham_2022_Commonwealth_Games_-_Annex_1.3.pdf

²³ ONS, 'GDP deflators at market prices, and money GDP September 2023 (Quarterly National Accounts)'. See: <https://www.gov.uk/government/statistics/gdp-deflators-at-market-prices-and-money-gdp-september-2023-quarterly-national-accounts>

²⁴ Games-related visitors are visitors to Birmingham and the West Midlands (both from within and outside the area) whose main purpose of being in the area was to attend or participate in a Games-related event or activity (e.g. attending a ticketed event, free-to-view event or live site).

Data from the OC on ticket sales and attendee data was also used in the analysis.

3.3 Approach to estimating total gross spend of Games-related visitors

As part of the WMGC Visitor Survey and the OC Spectator Survey, respondents were asked to provide an indication of how much they (i.e. the person being surveyed and the people they were travelling/ visiting with) had collectively spent in the following spend categories:

- Accommodation;
- Food and drink;
- Entertainment (including admissions to attractions, theatre, cinema tickets, guided tours, etc.);
- Travel and transport in the area (including fuel, fares, car parking charges, etc.);
- Commonwealth Games tickets;
- Shopping;
- Anything else.

Spend on Commonwealth Games tickets was excluded from the analysis of the short-term economic impacts associated with visitors spend to avoid double counting, as the revenues from this spending are captured in the OC data and therefore forms part of the short-term economic impacts associated with the planning and delivery of the Games events.

To take into account differences in the amount spent by different type of visitors, the average spend per attendee, for each of the categories of spend detailed above, was estimated for the following groups:

- West Midlands residents who attended ticketed Games events;
- West Midlands residents who attended non-ticketed Games events;
- Non-West Midlands residents who attended ticketed Games events; and
- Non-West Midlands residents who attended non-ticketed Games events.

The total spend incurred by Games-related visitors was then estimated by scaling up the average spend of these type of visitors by:

- the estimated total number of ticketed attendees from the West Midlands;
- the estimated total number of ticketed attendees from outside the West Midlands;
- the estimated number of non-ticketed attendees from the West Midlands; and
- the estimated number of non-ticketed attendees from outside the West Midlands.

The total number of ticketed attendees from the West Midlands and from outside of the West Midlands was estimated by scaling the OC data on the total number of ticketed attendees to the proportion of tickets sold to West Midlands and non-West Midlands residents.

The number of non-ticketed attendees from the West Midlands and from outside of the West Midlands was estimated based on:

- the proportion of respondents to the WMGC survey who attended non-ticketed Games events and were from the West Midlands and from outside the West Midlands;
- the proportion of respondents to the WMGC survey who attended ticketed Games events and were from the West Midlands and from outside the West Midlands;
- the estimated number of ticketed attendees from the West Midlands and from outside of the West Midlands.

The total spend incurred by Games-related visitors was then estimated as follows:

$$\begin{aligned}
 & \textit{Total Games – related visitors' spend} \\
 & = \textit{total spend by West Midlands residents attending ticketed Games events} \\
 & + \textit{total spend by non West Midlands residents attending ticketed Games events} \\
 & + \textit{total spend by West Midlands residents attending non ticketed Games events} \\
 & + \textit{total spend by non West Midlands residents attending non ticketed Games events}
 \end{aligned}$$

3.4 Approach to estimating gross GVA and employment impacts

In line with the economic impacts associated with the delivery of the Games events and wider legacy activity (see Section 2), the short-term economic impacts generated through the attendee spending resulting from attracting visitors to Birmingham and the West Midlands were estimated in terms of:

- **Direct impacts:** the first-round effects where visitor spending in the West Midlands during Games-time generated business activity and output through its UK operations.
- **Indirect impacts:** the effects generated through the activities in the supply chain as a result of visitor spend during Games events.
- **Induced impacts:** the multiplier effects that arise in the UK economy as a result of those employed in the supply chain, for example, hospitality, spending a portion of their wages in the UK. This spending generates additional economic activity for those businesses from which these employees buy goods and services and these businesses' own wider supply chains.

To estimate the GVA impacts associated with the spending of Games-related attendees, the estimated total Games-related visitors' spend was used.

In order to convert the visitors' spend into direct GVA, SIC codes were assigned to each category of spend (see Table 7 below).

Table 7: SIC spend categories

Spend Category	SIC Code	Description of SIC Code
Accommodation	55	Accommodation services
Food and drink	56	Food and beverage serving services
Entertainment (including admissions to attractions, theatre, cinema tickets, guided tours, etc.)	93	Sports services and amusement and recreation services
Travel and transport in the area (including fuel, fares, car parking charges, etc.)	49.2	Rail transport services
Shopping	47	Retail trade services, except of motor vehicles and motorcycles
Anything else	96	Other personal service activities

Source: ONS

Visitor spend in each spend category was then converted into direct GVA using the relevant industry specific GVA to Output ratio for the associated SIC Code sourced from the ONS²⁵.

Indirect and induced GVA were estimated by applying the relevant sector specific Type I and Type II GVA multipliers to the estimated direct GVA associated with each spend category.

²⁵ ONS (2019) [Input-output supply and use tables](#)

To estimate the direct employment associated with the visitors' spending, the sector specific GVA per FTE²⁶ ratios were applied to the estimated direct GVA impacts associated with the spending of Games-related visitors.

Indirect and induced employment were then estimated by applying sector specific Type I and Type II employment multipliers to the estimated direct employment associated with each spend category.

3.5 Approach to estimating the total net spend of Games-related visitors and the associated net GVA and employment impacts

Section 3.3 above details the approach taken to estimate the actual (gross) spending of Games-related visitors whilst attending the Games-related events. However, some of this spending may have occurred at the expense of spending on an alternative activity which would have been undertaken instead.

In order to understand the additional economic impact for the West Midlands and the UK²⁷, the level of expenditure incurred by Games-related visitors that was over and above what would otherwise have been spent on any alternative activities was assessed.

This assessment is based on evidence obtained via the OC survey. Respondents were asked about what, if anything, they would have spent in each category of spend had they not attended Games-related events, and where geographically (within the West Midlands, elsewhere in the UK, or outside of the UK) this spend would have been.

Based on this, by taking the difference between the actual spend of Games-related visitors whilst attending Games-related events, and what they would have otherwise spent had they not attended Games-related events, the additional non-displacing spend (i.e. the net spend) of Games-related visitors was estimated.

The additional spend was estimated at the West Midlands and UK level by taking into consideration where the Games-related visitors would have otherwise spent money had they not attended Games-related events.

The additional spend at the West Midlands and UK level was then converted into GVA and employment following the methodology detailed in Section 3.4.

²⁶ Data sourced from the ONS was used to estimate sector-level GVA per FTE ratio. Specifically, data on number of FTEs per £1m of output is available at a sector level was sourced from the latest (2019) FTE multipliers and effects (See: <https://www.ons.gov.uk/economy/nationalaccounts/supplyandusetables/adhocs/1254ftemultipliersandeffectsreferenceyear2019>). Data on number of FTEs per £1m of output was then combined with the GVA to Output ratio sourced from the UK input-output analytical tables, industry by industry (See: <https://www.ons.gov.uk/economy/nationalaccounts/supplyandusetables/datasets/ukinputoutputanalyticaltablesindustrybyindustry>). Together, these were used to estimate the sector level GVA per FTE ratios.

²⁷ The level of information gathered through the survey does not allow to report results at the Birmingham level.

4 Approach to estimating the social impacts associated with the delivery of the B2022 Commonwealth Games sporting events and Legacy Programmes

4.1 Introduction

In addition to the analysis of the economic impacts associated with the Games, a social impact analysis was undertaken to assess key elements of social value generated by the delivery of the Games events and wider legacy activity.

As detailed in Section 2.4.3 of the one year post-Games evaluation report, the social impact analysis includes:

- social value generated through the OC supply chain; and
- social value to the individual and community generated through the OC, legacy and capital programmes as a result of individuals gaining qualifications, completing apprenticeships, volunteering, gaining employment, and being physically active, as a result of the Games.

As detailed in the Framework Evaluation²⁸, the methodologies employed as part of the social impact analysis were based on recognised impact analysis methodologies, such as those set out in the National Social Value Measurement Framework (also known as the National TOMS Framework²⁹), and specific methodologies for measuring the impact of events, such as in the guidance produced by eventIMPACTS³⁰.

The approach followed to estimate the social impacts generated by the delivery of the Games events and wider legacy activity is detailed in the sections below.

4.2 Approach to estimating social value generated through the Organising Committee supply chain

The OC commissioned Social Value Portal to estimate the social value associated with its activities and the social value commitments delivered by 33 OC contractors and suppliers. The approach for this is detailed in the National TOMS Framework. This analysis forms the basis of the estimation of social value generated through the OC supply chain within the Games-wide evaluation.

Specifically, the social value generated through the OC supply chain was estimated based on the suppliers' delivery against commitments in the following areas:

²⁸ HM Government, 2021. Birmingham 2022 Commonwealth Games Pre-Games Evaluation Framework and Baseline Report. November 2021. See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033734/Birmingham_2022_Pre-Games_Evaluation_Framework_and_Baseline_Report.pdf

²⁹ Social Value Portal. 2022. 'The method behind the movement'.

³⁰ eventIMPACTS Social Measures toolkit. Sourced from: <http://www.eventimpacts.com/~media/event-impacts/downloadableresources/social/social-measurescomplete-toolkit.pdf?a=en>

- Number of staff hours dedicated to supporting under 24 years of age (young people) unemployed people into work through career mentoring, including mock interviews, CV advice, and careers guidance;
- Number of staff hours spent on local school and college visits e.g. delivering career talks, curriculum support, literacy support, safety talks (including preparation time);
- Number of staff hours dedicated to providing expert business advice to voluntary, community and social enterprises (VCSEs) and Micro-, Small and Medium-sized Enterprises (MSMEs) (e.g. financial advice / legal advice / HR advice/ Health and safety);
- Number of hours of equality, diversity and inclusion training provided both for staff and supply chain staff;
- Number of weeks of training opportunities delivered to employees;
- Number of employees (FTEs) hired who were ex-offenders;
- Number of employees (FTEs) hired who were not in education, employment or training (NEETs);
- Number of employees (FTEs) who were long term unemployed;
- Value of investment in the community;
- Number of weeks of work placements offered; and
- Number of weeks of apprenticeships offered.

It should be noted that:

- Local economic values estimated as part of the National Social Value Measurement Framework have been excluded from this analysis to avoid double counting with the economic impact analysis.
- Social value associated with commitments made by OC suppliers relating to environmental sustainability savings (i.e. Carbon reduction; Waste reduction; Car miles saved) were excluded as these are not 'benefits' but reductions in negative impacts, where those negative impacts are not valued within the National Social Value Measurement Framework.

For each of the above commitments, the National TOM's Framework provides a proxy value to apply to the unit delivered by the organisation(s). The result of this is the estimated social impact generated from the delivery of the commitments.

As part of the one year post-Games social impact analysis, the proxies detailed in the National TOM's Framework were converted into 2023 prices using the ONS GDP deflators³¹.

4.3 Approach to estimating social value generated as a result of an income uplift

4.3.1 Introduction

As a result of participation in the Jobs and Skills Academy and in the OC Volunteering Programme, it was identified that a proportion of participants may benefit from an income uplift as a result of earnings growth, and moving from unemployment to employment.

The approach followed to estimate the social impact associated with this income uplift is detailed below.

³¹ ONS 2023, GDP deflators 2023. See: <https://www.gov.uk/government/statistics/gdp-deflators-at-market-prices-and-money-gdp-march-2023-spring-budget>.

4.3.2 Approach to estimating social value generated as a result of an income uplift for participants who were employed before the Games

Evidence gathered from the one year post-Games survey of Jobs and Skills Academy participants and the Volunteer Survey shows that a proportion of participants reported to have benefitted from a salary increase which they said was as a direct result of their participation in the Academy and in the OC Volunteering Programme.

Jobs and Skills Academy

Respondents to the one year post-Games Jobs and Skills Academy survey who selected that (i) they were employed before their participation in the Jobs and Skills Academy, and (ii) that they were employed at the time of the one year post-Games survey, were asked to report on:

- how much they earned before they participated in the Academy (in 2020); and
- how much they earned at the time of the one year post-Games survey.

Table 8: Salary brackets presented in Jobs and Skills Academy survey

Salary brackets
Less than £5,500 per year (Less than £100 per week, Less than £450 per month)
£5,500 to under £10,500 per year (£100 to under £200 per week, £450 to under £850)
£10,500 to under £18,000 per year (£200 to under £350 per week, £850 to under £1,150 per month)
£18,000 to under £22,000 per year (£350 to under £425 per week, £1,150 to under £1,800 per month)
£22,000 to under £27,000 per year (£425 to under £500 per week, £1,800 to under £2,200 per month)
£27,000 to under £31,000 per year (£500 to under £600 per week, £2,200 to under £2,600 per month)
£31,000 to under £35,000 per year (£600 to under £700 per week, £2,600 to under £3,000 per month)
£35,000 to under £44,000 per year (£700 to under £850 per week, £3,000 to under £3,700 per month)
£44,000 to under £66,000 per year (£850 to under £1200 per week, £3,700 to under £5,500 per month)
£66,000 or more per year (£1200 or more per week, £5,500 or more per month)
Prefer not to say

Source: Jobs and Skills Programme

The reported values relating to the salaries that were gained before participation in the Academy were adjusted for average earning growth (from 2020 to 2023) based on data sourced from the Office for Budget Responsibility (OBR)³² to isolate the impacts associated with the participation in the Jobs and Skills Academy.

While it is recognised that there may be wider factors driving the potential increase in salary, the income uplift generated as a result of participation in the Academy was estimated by taking the difference between the reported one year post-Games salary and the earnings growth-adjusted pre-Academy salary.

The total income uplift generated as a result of participation in the Academy was estimated by scaling up the salary increase using the percentage of respondents reporting a salary increase, and the total number of participants in the Academy.

OC Volunteering Programme

A similar approach was followed to estimate the social impact generated as a result of income uplifts for those volunteers that benefitted from a salary increase as a result of their participation in the OC Volunteering Programme.

Respondents to the one year post-Games Volunteer Survey who (i) were employed before participating in the OC Volunteering Programme and who (ii) were employed at the time of the one

³² Office for Budget Responsibility (OBR). Historical official forecasts database. See: <https://obr.uk/data/>

year post-Game survey, were asked whether their salary had increased since participating in the OC Volunteering Programme.

Respondents were asked to select by how much their salary had increase based on the following brackets:

Table 9: Salary increase brackets presented in the Volunteer Survey

Salary band
Under £1,000
£1,000-£1,999
£2,000-£4,999
£5,000-£9,999
£10,000+

Source: Volunteer Survey 2023

Respondents were also asked the extent to which the OC Volunteering Programme had an impact on said salary increase. Only responses from respondents who stated that their participation in the OC Volunteering Programme had played a significant role in obtaining this increase/ they would not have received the salary increase had it not been for the OC Volunteering Programme, were considered as part of this analysis.

The total income uplift generated as a result of a salary increase following participation in the OC Volunteering Programmes was estimated by scaling up the average salary impact using the percentage of respondents reporting a salary increase as a direct result of their participation in the OC Volunteering Programme, and the total number of participants in the OC Volunteering Programme.

4.3.3 Approach to estimating social value generated as a result of an income uplift for participants previously unemployed before the Games

In line with the approach detailed in Section 4.3.2, it was identified that a share of participants in the Jobs and Skills Academy and the OC Volunteering Programme moved from unemployment to employment, which they reported was as a direct result of their participation in the programmes.

Jobs and Skills Academy

As part of the programme monitoring and reporting, the Jobs and Skills Programme provided the number of people who moved from unemployment to employment as a result of their participation in the Academy.

Data from the one year post-Games Jobs and Skills Academy survey provided evidence on the average salary gained by respondents who had reported to have moved from unemployment to employment.

The total income uplift generated as a result of participants in the Academy moving from unemployment to employment was estimated by applying the estimated average salary sourced from the one year post-Games Jobs and Skills Academy survey to the total number of Academy participants that moved from unemployment to employment as a result of their participation in the Academy as provided by the programme.

OC Volunteering Programme

As part of the one year post-Games Volunteer Survey, respondents who had selected that they were employed at the time of the survey were asked whether they were employed in the six months before their OC Volunteering experience.

Those that selected they were unemployed before their volunteering experience were asked the extent to which the Volunteering Programme made a difference to their ability to gain employment. Those respondents reporting that *'It made a lot of difference / I wouldn't have got this job without the Games experience'* were then asked to report the band in which their annual individual income fell into.

Table 10: Salary brackets presented in the Volunteer Survey

Total
Less than £10,000
£10,000 to £19,999
£20,000 to £29,999
£30,000 to £49,999
£50,000 to £74,999
£75,000 to £99,999
£100,000 or more
Prefer not to say

Source: Volunteer Survey 2023

The total income uplift generated as a result of participants in the OC Volunteering Programme moving from unemployment to employment was estimated by applying the estimated average salary sourced from the one year post-Games Volunteer Survey to the total estimated number of volunteers who had moved from unemployment to employment as a result of the OC Volunteering Programme (i.e. for the proportion of participants moving in to employment who reported that the OC Volunteering *'made a lot of difference / I wouldn't have got this job without the Games experience'*).

4.4 Approach to estimating social value to the community as a result of volunteering

As set out in the main evaluation, existing research and evidence shows that time dedicated to volunteering generates value to the community. Approaches for valuing the social impact of different types of volunteering are detailed below.

Games-time volunteers

To estimate the social value to the community generated as a result of the total hours of volunteering by Games-time volunteers, the evaluation used an approach in line with EventIMPACTS guidance.³³

This approach uses the average wage in the occupation in which the volunteering is delivered, and the number of hours spent volunteering.

In this case, the median hourly wage³⁴ for the 'Sports activities and amusement and recreation activities' sector³⁵ was used and applied to the OC reported total number of volunteering hours.

It should be noted that the median hourly wage was inflated to 2023 prices using the ONS UK GDP deflators³⁶.

³³ Ibid.

³⁴ ONS, See: [Earnings and hours worked, industry by two-digit SIC: ASHE Table 4 - Office for National Statistics \(ons.gov.uk\)](https://www.ons.gov.uk/employment-and-labour/money-earnings-and-payments/tables/earningsandhoursworkedindustrybytwodigitSIC)

³⁵ SIC code 93.

³⁶ ONS 2023, GDP deflators 2023. See: <https://www.gov.uk/government/statistics/gdp-deflators-at-market-prices-and-money-gdp-march-2023-spring-budget>.

Staff at capital programmes' contractors dedicating their time to volunteering activities

Lack of information on the type of volunteering activities that were undertaken by staff at the capital programmes' contractors meant that a different approach had to be followed to estimate the social value generated through this route.

To estimate the social value to the community generated as a result of staff at the capital programmes' contractors dedicating their time to volunteering activities, the evaluation followed the approach detailed in the National TOMS Framework³⁷. In this approach, the value of the volunteering time is estimated using an estimated mean wage rate for volunteers. This wage rate, sourced from the National TOMs Framework, is based on typical volunteering activities based on analysis of results from the Community Life Survey, valued at the closest market equivalent rate from the Annual Survey of Hours and Earnings.³⁸

This estimated hourly wage was inflated to 2023 prices using the ONS UK GDP deflators³⁹.

The estimated hourly wage value was then applied to the total number of volunteer hours delivered by staff at the capital programmes' contractors.

4.5 Approach to estimating wellbeing value associated with moving from unemployment to employment, and to volunteering

As detailed in the HMT Green Book supplementary Wellbeing Guidance for Appraisal⁴⁰, wellbeing benefits are generated as a result of individuals gaining employment, as well as individuals that volunteer.

The approaches followed to estimate the wellbeing benefits generated via these two routes are detailed in the following sections.

Moving from unemployment to employment

As reported in the Wellbeing Guidance for Appraisal, '*unemployment is one of the most important factors affecting individual wellbeing*'.

The What Works Centre for Wellbeing systematic review highlights that, when measuring life satisfaction on a 0-10 scale, the unemployed report about 0.5 points lower compared to those who are in employment.⁴¹

The approach followed as part of this analysis is based on:

³⁷ 2023. The National TOMs. See: [The National TOMs - Social Value Portal](#)

³⁸ See: Social Value Portal. 2022. '[The method behind the movement](#)'.

³⁹ ONS 2023, GDP deflators 2023. See: <https://www.gov.uk/government/statistics/gdp-deflators-at-market-prices-and-money-gdp-march-2023-spring-budget>.

⁴⁰ HM Treasury 2021. Wellbeing Guidance for Appraisal July 2021. See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005388/Wellbeing_guidance_for_appraisal_-_supplementary_Green_Book_guidance.pdf.

⁴¹ HM Treasury 2021. Wellbeing Guidance for Appraisal July 2021. See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005388/Wellbeing_guidance_for_appraisal_-_supplementary_Green_Book_guidance.pdf.

- the value of a Wellbeing-adjusted Life Year (WELLBY)⁴², which corresponds to a one point change in life satisfaction on a 0-10 scale, as detailed in the Wellbeing Guidance for Appraisal⁴³; and
- the fixed effects on life satisfaction resulting from being in employment, sourced from a report by Clark et.al 2018⁴⁴

The approach followed to monetising the wellbeing impact associated with being in employment gives a value of £6,200 per individual who moved into employment per year (in 2023 prices).

To estimate the total wellbeing value generated as a result of individuals moving from unemployment to employment, the wellbeing value per person per year (£6,200) was applied to the total number of Jobs and Skills Academy participants who moved from unemployment to employment as a result of their participation in the Jobs and Skills Academy.

Volunteering

To estimate the wellbeing value generated as a result of Games-time volunteers spending time volunteering, the Games-wide evaluation team consulted the What Works Centre to understand the most appropriate methodology to apply in this analysis.

The approach followed as part of this analysis is based on:

- the value of a WELLBY⁴⁵, as detailed in the Wellbeing Guidance for Appraisal⁴⁶; and
- the fixed effects on life satisfaction resulting from volunteering, based on different frequencies of volunteering, sourced from a report by Lawton, Gramatki, Watt, and Fujiwara, 2020, on the happiness of volunteer⁴⁷.

The Lawton, Gramatki, Watt, and Fujiwara paper reports different fixed effects on life satisfaction based on the frequency of volunteering: At least once a week; At least once a month; Several times a year; Once a year or less.

For the purpose of this analysis, the coefficient for ‘*several times a year*’ was used to estimate the impact on life satisfaction as a result of time spent volunteering by Games-time volunteers. What Works Centre advised this would be the most appropriate means of capturing the impact of the OC volunteering, given that volunteers supported Games delivery for 12 consecutive days.

The approach followed to monetise the wellbeing impact associated with volunteering gives a value of £353 per volunteer per year (in 2023 prices).

To estimate the total wellbeing value generated as a result of Games-time volunteers volunteering, the wellbeing value per person per year (£353) was applied to the total number of Games-time volunteers.

⁴² It should be noted that this value, as reported in the Supplementary Guidance, was reported in 2019 prices and was converted to 2023 prices using the ONS GDP Deflator.

⁴³ HM Treasury 2021. Wellbeing Guidance for Appraisal July 2021. See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005388/Wellbeing_guidance_for_appraisal_-_supplementary_Green_Book_guidance.pdf.

⁴⁴ Clark, A., Layard, R., Flèche, S., Ward, G., & Powdthavee, N. (2018). The origins of happiness: The science of wellbeing over the life course. Princeton, NJ: Princeton University Press. See table 42, page 27 [onlinematerial.pdf \(lse.ac.uk\)](https://www.princeton.edu/~principla/online-material/online-material.pdf)

⁴⁵ It should be noted that this value, as reported in the Supplementary Guidance, was reported in 2019 prices and was converted to 2023 prices using the ONS GDP Deflator.

⁴⁶ HM Treasury 2021. Wellbeing Guidance for Appraisal July 2021. See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005388/Wellbeing_guidance_for_appraisal_-_supplementary_Green_Book_guidance.pdf.

⁴⁷ Coefficients from Lawton, R. N., Gramatki, L., Watt, W., and Fujiwara, D. (2020) Happy Days: Does volunteering make us happier or is it that happier people volunteer, Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being, <https://doi.org/10.1007/s10902-020-00242-8>

4.6 Approach to estimating the long-term social impact generated as a result of gaining qualifications and completing apprenticeships

There are a number of existing studies and reports that cite evidence of the positive impact education, qualifications and skills development can have on individuals' future employment and earning potential. For example, evidence presented in a 2011 paper published by the Department for Business, Innovation and Skills (BIS)⁴⁸ shows that there are positive employment and earnings returns for qualifications gained in adulthood and from completion of apprenticeships.

The 2011 BIS paper estimates that there are positive lifetime returns both to the individual (in terms of increased lifetime income) as well as to Government (in terms of increased tax revenue).

The approaches followed to estimate the long-term social value generated via individuals gaining qualifications and completing apprenticeships as a result of the Games are detailed in the following sections.

Gaining qualifications

As part of the training provided via the Jobs and Skills Academy, participants had the opportunity to gain National Vocational Qualification (NVQ) Level 1 to Level 3.

The Jobs and Skills Programme provided data on the total number of qualifications gained, split by:

- the level of qualification, and
- the highest level of qualification that was previously (before participation in the Academy) attained by the individual.

Table 11 presents the rates of return associated with gaining qualifications in adulthood as reported in the 2011 BIS paper.

Table 11: Rates of return associated with gaining qualifications (2009 prices, net present value (NPV))

	Individual NPV		Exchequer NPV		Total	
	Lower	Upper	Lower	Upper	Lower	Upper
National Vocational Qualification Level 1	£14,253	£32,139	£4,449	£13,953	£18,702	£46,092
National Vocational Qualification Level 2	£17,728	£42,411	£4,798	£18,766	£22,526	£61,177
National Vocational Qualification Level 3	£36,848	£66,593	£21,676	£37,517	£58,524	£104,110

Source: BIS 2011

The rates provided in Table 11 were adjusted for average earning growth (from 2009 to 2022) based on data sourced from the OBR⁴⁹, and were then adjusted to 2023 prices based on ONS GDP deflators (from 2022 to 2023).

To estimate the lifetime returns of gaining qualifications in adulthood through the Jobs and Skills Academy, the first step was to convert the rates provided in the 2011 BIS paper (see Table 11) into annual returns.

⁴⁸ BIS 2011, Returns to Intermediate and Low Level Vocational Qualifications. See: [Returns to Intermediate and Low Level Vocational Qualifications \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/214441/Returns-to-Intermediate-and-Low-Level-Vocational-Qualifications.pdf)

⁴⁹ Office for Budget Responsibility (OBR). Historical official forecasts database. See: <https://obr.uk/data/>

To do this the Games-wide evaluation team first estimated the number of years the returns were expected to be realised over based on the assumed age of individuals⁵⁰, length of training⁵¹ and lag in returns⁵², used in the 2011 BIS paper.

Subsequently, the rates of return were converted into non-discounted annual figures using the discount rate of 3.5% sourced from the HM Treasury Green Book.⁵³

The non-discounted annual returns were then applied for the assumed number of years in which the returns will be generated, based on the age of the Jobs and Skills Academy participants (as provided by the Jobs and Skills Programme). These lifetime returns were then discounted over the estimated lifetime period using the discount rate of 3.5% as per the HM Treasury Green Book.⁵⁴

The estimated lifetime impact to the individual and UK Government as a result of individuals gaining qualifications through the Games was estimated by applying the NPV values of returns to qualifications to the total number of individuals that gained qualifications as a result of their participation in the Jobs and Skills Academy, as provided by the Jobs and Skills Programme.

Completing apprenticeships

The OC, as well as contractors working on the redevelopment of Alexander Stadium, the construction of Sandwell Aquatics Centre, and the regeneration of Perry Barr, offered apprenticeships. Due to lack of information on the level of apprenticeships offered by the OC and by the contractors working on the capital programmes, it was assumed that all apprenticeships were at Level 2 and that these apprenticeships would not have been delivered if it were not for the Games.

In line with the approach detailed in the section above, the 2011 BIS paper estimates that there are lifetime returns to both the individual and Government resulting from individuals completing apprenticeships.

Table 12: Rates of return associated with completing apprenticeships (2009 prices, net present value (NPV))

	Individual NPV		Exchequer NPV		Total	
	Lower	Upper	Lower	Upper	Lower	Upper
Apprenticeship Level 2	£48,324	£74,387	£34,404	£50,460	£82,728	£124,847
Apprenticeship Level 3	£76,990	£117,337	£59,260	£84,289	£136,250	£201,626

Source: BIS 2011

The rates detailed in Table 12 were adjusted for average earning growth (from 2009 to 2022) based on data sourced from the OBR⁵⁵, and were then adjusted to 2023 prices based on ONS GDP deflators (from 2022 to 2023).

In line with the estimated rates of return associated with gaining qualifications, the 2011 BIS paper had a number of underlying assumptions on the age of apprentices⁵⁶, and the resulting lifetime period in which the benefits would be generated.

⁵⁰ The 2011 BIS paper assumes that the starting age of individuals gaining NVQ Level 1 is 17, gaining NVQ Level 2 is 18 and gaining NVQ Level 3 is 19.

⁵¹ The 2011 BIS paper assumes that the length of training for NVQ Level 1 is 0.5 years, for NVQ Level 2 is 1.5 years, and for NVQ Level 3 is 2.5 years.

⁵² The 2011 BIS paper assumes that there is a one year lag for benefits to start to be generated.

⁵³ HM Treasury, 2013. Green Book supplementary guidance: discounting. Please see: <https://www.gov.uk/government/publications/green-book-supplementary-guidance-discounting>.

⁵⁴ HM Treasury, 2013. Green Book supplementary guidance: discounting. Please see: <https://www.gov.uk/government/publications/green-book-supplementary-guidance-discounting>.

⁵⁵ Office for Budget Responsibility (OBR). Historical official forecasts database. See: <https://obr.uk/data/>

⁵⁶ The 2011 BIS Paper assumed that individuals completing Level 2 apprenticeships were 18 year olds.

Following the same approach as the one detailed for those that gained qualifications, the lifetime rates of return were adjusted to account for the revised lifetime period in which benefits are expected to be generated as a result of completing an apprenticeship. Due to lack of information on the age of those individuals that completed apprenticeships with the OC and with the contractors working on the capital programmes, for the purposes of the analysis, the UK national average age profile of apprentices⁵⁷ was used.

The estimated lifetime impact to the individual and UK Government as a result of individuals completing apprenticeships was estimated by applying the NPV values of returns to apprenticeships to the total number of individuals that completed apprenticeships with the OC and with the contractors working on the redevelopment of Alexander Stadium; the construction of Sandwell Aquatics Centre; and the regeneration of Perry Barr.

4.7 Approach to estimating social impacts generated as a result of people being physically active

4.7.1 Introduction to the Social Value Calculator for physical activity

Physical activity can generate positive impact and benefits in terms of the well-being and development of individuals and the community as a whole. By monetising the Social Value associated with this, the impact of investment in sport and physical activity can be measured.

The Social Value Calculator (SVC) was initially created in 2015 (SVC1) by 4GLOBAL in collaboration with Sheffield Hallam University (SHU) and Experian. It underwent updates in 2018 (SVC2) and 2021 (SVC3) based on SHU's research and Sport England's report, illustrating the positive contributions of community sport and physical activity to the Government's sports strategy, *Sporting Future*. Widely used in the sport ecosystem, it is employed by National Governing Bodies (NGBs) and plays an important role in Sport England's Moving Communities platform, providing Social Value insights to public leisure operators in England.

In 2014, Sheffield Hallam University's Sport Industry Research Centre (SIRC) developed a national model for measuring Social Return on Investment (SROI) in sport in England. The research was funded by the Higher Education Innovation Fund (HEIF), DCMS and Sport England (Davies et al, 2019). The 2014 SROI model served as the basis for the SVC1. In 2019, Sport England commissioned SIRC to update the national SROI sport model for England, with this research allowing for the development of the SVC3. SVC3 also aligns with WHO's physical activity guidelines and Sport England's recent "Social and economic value of community sport and physical activity" publication, with it excluding the value generated through volunteering in sport.

4.7.2 Methodology

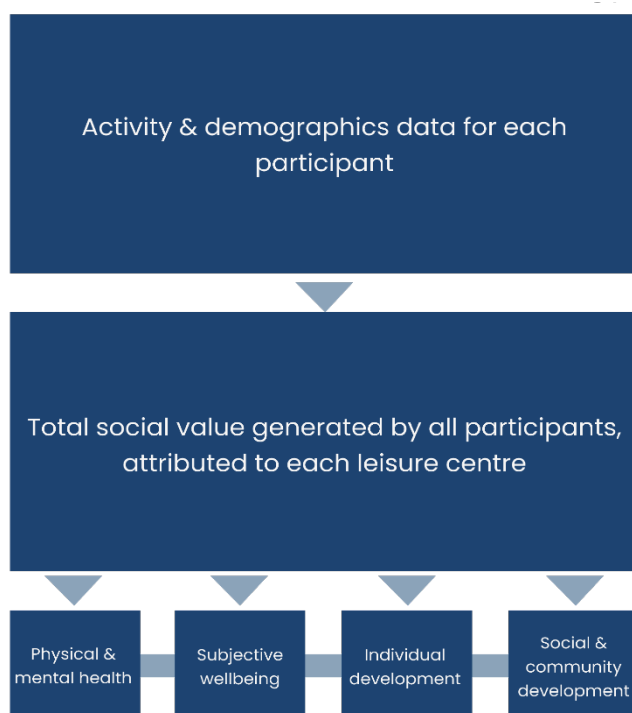
For the purpose of this evaluation, the standard SVC methodology used in 4GLOBAL's DataHub and Sport England's Moving Communities platform was applied.⁵⁸ This uses live participation data collected at leisure facilities in England, which is then inputted into the Moving Communities platform and DataHub. The Social Value generated through an individual's participation in physical activity depends on demographic factors, including their age, gender and lifestyle characteristics, and the activity profile of an individual (duration and frequency of activity within a leisure venue). The value estimated is divided into four key indicators and outcome areas: physical and mental health; subjective wellbeing; individual development; and social and community development.

⁵⁷ House of Commons Library, 2021. Apprenticeship Statistics, March 2021. See: <https://researchbriefings.files.parliament.uk/documents/SN06113/SN06113.pdf>.

⁵⁸ 4GLOBAL, Social Value Calculator. See: <https://4global.com/product/social-value-calculator-2/>

Figure 1 below summarises the approach to estimating Social Value from physical activity, with further explanation provided in the sections below.

Figure 1: Social Value Calculator methodology summary



Source: Sport England, *Moving Communities*

4.7.3 Outcome areas

The Physical and Mental Health outcome area is comprised of various sub-categories relating to specific health related outcomes, illnesses or diseases. The Social Value generated as a consequence of the decreased risk of an individual developing a harmful health condition due to their physical activity participation is dependent on different demographic groups, prevalence rates of the disease within these groups, and the cost of medical treatment. These measures take account of the increased risk of injury as a result of taking part in physical activity.

Table 13 shows the factors incorporated into each outcome category of Social Value, with further detail provided below.

Table 13: Social Value outcome areas

Outcome	Description
Physical and Mental Health	
CHD/Stroke	Reduced risk (participants 16+)
Breast cancer	Reduced risk (female participants 16+)
Colon cancer	Reduced risk (participants 16+)
Type 2 diabetes	Reduced risk (participants 16+)

Hip fractures	Reduced risk (participants 65+)
Back pain	Reduced risk (participants 16+)
Dementia	Reduced risk (participants 16+)
Depression	Reduced risk (participants 16+)
Injuries	Increased risk (participants 16+) – this is a negative value in the model
Subjective Wellbeing	
Subjective wellbeing	Improved life satisfaction (participants 16+)
Individual Development	
Educational attainment	Improved educational attainment (participants 11 – 18)
Human capital	Enhanced human capital (average additional salary for graduates)
Social and Community Development	
Crime	Reduced criminal incidences (male participants 10-24)
Social capital	Improved social networks, trust and reciprocity

Outcomes estimated in the SVC and the assumptions applied in the analysis are consistent with the 2019 research conducted by Sheffield Hallam University and national SROI sport model for England, as detailed below.⁵⁹ The Social Value estimates are expressed initially on a 'per participant per month' basis and for the purpose of this evaluation, these have been aggregated to an annual figure for one year pre-Games (between Q2 2021 – Q1 2022) and one year post-Games (between Q3 2022 and Q2 2023).⁶⁰

Further detail on the methodologies applied for each of the four Social Value pillars (Physical and Mental Health, Mental Wellbeing, Individual Development and Social and Community Development) is detailed below. The methodology across each of the Social Value pillars is specific and consistent with the SVC and has not been altered for the Games. The Social Value analysis and consequent values generated is purely for leisure facilities in England.

Physical and Mental Health

- Social Value associated with each of the eight health outcomes (reduced risk of various health conditions) was estimated based on estimates of the number of reduced cases resulting from sports participation multiplied by the average annual cost per person diagnosed with the condition.
- Social Value associated with reduced GP visits & psychotherapy usage was calculated by estimating the reduced likelihood of visiting the GP 6+ times per year / using psychotherapy services, multiplied by the average annual cost savings per person.⁶¹

⁵⁹ Further detail on the 2019 SROI model and approach can be found at: <https://www.tandfonline.com/doi/abs/10.1080/19406940.2019.1596967>. Davies, L. E., Taylor, P., Ramchandani, G., & Christy, E. (2019). Social return on investment (SROI) in sport: a model for measuring the value of participation in England. *International Journal of Sport Policy and Politics*, 11(4), 585-605.

⁶⁰ Analysis specifically compared Social Value generated by leisure centres in Games Host Local Authorities between Q2 2021 – Q1 2022, to that generated between Q3 2022 and Q2 2023 (excluding the quarter the Games fell in – Q2 2022).

⁶¹ Further detail on the 2019 SROI model and approach can be found at: <https://www.tandfonline.com/doi/abs/10.1080/19406940.2019.1596967>. Davies, L. E., Taylor, P., Ramchandani, G., & Christy, E. (2019). Social return on investment (SROI) in sport: a model for measuring the value of participation in England. *International Journal of Sport Policy and Politics*, 11(4), 585-605.

- Social Value associated with injuries was valued by multiplying the number of A&E attendances recorded as sport injuries by the average annual cost of an injury. Different from the other indicator, this has a negative impact on the total Social Value.
- The SVC3 modifies health values for age, gender and NS-SEC category 4, using weights which are derived using the prevalence of disease reported in the Health Survey for England.⁶²

Mental Wellbeing

- Social Value associated with changes in subjective wellbeing was calculated by multiplying the value of increased wellbeing derived from a participant's engagement in sport (using the wellbeing valuation approach) by the number of unique people taking part.
- The wellbeing valuation approach uses large scale survey data to estimate the impact of sport on people's self-reported wellbeing and uses these estimates to calculate the amount of money that would produce the equivalent impact on wellbeing. The wellbeing value represents the hypothetical income required to compensate for not benefiting from wellbeing enhancement through participation in sport and physical activity.

Individual Development

- Social Value associated with changes in educational attainment as a result of changes in physical activity participation was valued by estimating the number of additional sports participants with formal qualifications (level 2 and level 3) by the average lifetime productivity returns.
- The human capital outcome represents the value of an individual's enhanced skills, gained through participating in sport at university. It was valued by estimating the number of final year students in Higher Education Institutions doing sport, multiplied by the average additional starting salary for sports participants.

Social and Community Development

- Social Value associated with changes in the crime outcome was valued by estimating the number of criminal incidents prevented amongst males in the 10-24 cohort taking part in sport, multiplied by the average cost per incident of crime.
- Social capital was valued in a similar way to subjective wellbeing, using the wellbeing valuation approach: The higher value of social capital derived from a participant's engagement in sport was multiplied by the number of unique people taking part in sport. The social capital value represents the hypothetical income required to compensate for not benefiting from social capital enhancement through participation in sport and physical activity.

4.7.4 Analytical assumptions

As mentioned above, all modelling and analytical assumptions made in the Social Value calculations are in line with the 2019 research conducted by Sheffield Hallam University and the national SROI sport model for England.⁶³ The key analytical assumptions from this are summarised below.

Threshold and duration of activity

- Social Value is generated for 'active' participants at the physical activity threshold of 150 minutes + per week of moderate activity (averaged across one month).⁶⁴
- For health outcomes, Social Value is generated for 'fairly active' participants (30-149 minutes). For this sub-group, research highlights that there is a linear dose-response relationship between participation (30-149 minutes) and a reduced risk of developing various health conditions.

⁶² NHS Digital, 'Health Survey for England', 2021, See: <https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england#methodology>

⁶³ *Ibid.*

⁶⁴ As measured by Sport England Levels of Activity. See: <https://www.sportengland.org/research-and-data/data/active-lives?section=measures>

- In the national SROI model, active travel is included in the calculation of the number of active / fairly active people for the health benefits but excluded from the calculation of active people for the other wellbeing, individual and community benefits.
- The average duration for each activity is derived from the DataHub participation data and is used for the active minute calculations where the specific duration information is not available.

Outcomes

- In line with the 2019 national SROI sport model for England, a number of evidence-based assumptions were used to calculate the SVC3 values. The risk reduction assumptions for physical and mental health outcomes are primarily informed by the 2019 UK Chief Medical Officers' Physical Activity Guidelines.⁶⁵

Multi-centre usage

- A monthly multi-centre usage deflator value was calculated using the DataHub data to discount the Social Value generated per participant for individuals participating at more than one leisure centre.
- In-facility deflators were calculated to adjust the Social Value per outcome (generated per participant), to discount for the contribution of activity which takes place outside facilities using the Active Lives Survey dataset.
- The proportion of activity (including the active travel) taking place in facilities was estimated using the Active Lives Survey for active and fairly active participants.⁶⁶ These values are then used as in-facility deflators to adjust the Social Values in the SVC3.

Members vs casual participants

- Members are defined as facility users with an active subscription (paid or unpaid) to use the facility. Members have a unique identifying number (member ID), demographic (age, gender) and postcode information in the DataHub extracts.
- Any individual member's demographic and activity profile can be tracked over the designated timeframe and used to accurately calculate Social Value.
- Casual participants refer to individuals that don't currently hold a membership at the leisure venue and therefore lack the unique identifier and demographic information. For example, a 5-a-side football booking would potentially comprise of 1 member participants and 9 casual participants.
- In order to calculate the Social Value for these casual participants, the profile of members at the given site is used to attribute any demographic weightings and the activity profile of these individuals. This is estimated by using "Leisure Card" holder averages across the sector within DataHub's UK venues.

4.7.5 Social Value estimation approach

For the purpose of this evaluation, the following steps were taken in order to estimate the change (improvement) in levels of Social Value generated as a result of the Games, at the Games Host Local Authority Level:

⁶⁵ UK Chief Medical Officers' Physical Activity Guidelines (2019). See: <https://assets.publishing.service.gov.uk/media/5d839543ed915d52428dc134/uk-chief-medical-officers-physical-activity-guidelines.pdf>

⁶⁶ As measured by Sport England Levels of Activity. See: <https://www.sportengland.org/research-and-data/data/active-lives?section=measures>

Step 1: Activity classification

Each individual is classified in an activity group based on their total duration of activity within a facility. The classification is different for health and other outcome areas based on their own thresholds from the relevant research findings, outlined in Table 14 below.

Table 14: Physical activity classification

Health outcomes	Status
150 + minutes per week	Active
30 - 149 minutes per week	Fairly Active
30 - minutes per week	Inactive
Non-health outcomes	Status
150 + minutes per week	Active
150 - minutes per week	Inactive

Source: Sport England, Levels of Activity⁶⁷

For the duration calculations, information from the leisure management systems was used and where not available, a proxy duration value was assigned based on the activity booked using the sector data collated in the DataHub. The duration figures have been adjusted in SVC3 using the assumptions from the national model for the participation, this incorporates an individual's activity both inside and outside facility. This methodology focusses specifically on the Social Value generated from within the facility and excludes any Social Value generated from non-facility based activity. When calculating the proportion of activity that takes place in a centre, in relation to all activity, the 'base' is larger for health outcomes, as these benefits are also generated from active travel outside centres.

Step 2: Demographic classification

Each member of the facility is classified in a demographic segment based on their age and gender, which are the key criteria for the risk reduction in health outcomes and benefits linked to other outcome areas – e.g. within the modelling approach breast cancer is only relevant for female participants, hip fractures are for 65+ year old participants and reduced crime is only relevant for 10-24 year old male participants.

Step 3: Mosaic classification

After the activity and demographic classification, each member of the facility is assigned to a Mosaic segment using their demographic and postcode information. Mosaic is a cross-channel consumer classification system designed by Experian which segments the population into 15 segments and 66 types that helps you to understand an individual's likely customer behaviour.⁶⁸ The 15 Mosaic segments are then grouped into 5 categories for Social Value calculation: Young, Old, Up, Mid, Down. Based on the Mosaic category combined with the activity classification and demographic segment of each person, a multiplier is then applied to the health value generated for each individual to capture the difference in risk reduction for health outcomes, e.g. the Old and Down groups generating higher savings / benefits than the young or affluent as a result of the same type of physical activity.

⁶⁷ *Ibid.*

⁶⁸ Experian. Mosaic segmentation groups and types. See: <https://www.experian.co.uk/business/platforms/mosaic/segmentation-groups>

Step 4: Social Value calculation for each participant

Based on the activity classification, demographic segments, mosaic categories and weightings calculated in Steps 1-3, the Social Value generated for each member is calculated for each of the four outcome areas and their sub-categories.

Step 5: Application of deflators

Two deflators are applied to the Social Value calculations in order to avoid double counting of the value generated by an individual person using multiple facilities within the same month, and to balance out the participation inside and outside the facility. This approach enables the Social Value Calculator to identify the Social Value attributable to the leisure centre participation within the overall Social Value generated for each individual.

Step 6: Social Value Calculation for each specific sites

Once the Social Value is estimated for each individual, it is summed up for all participants of the facility being analysed within the month to calculate the Social Value generated by the members that is attributable to the leisure centre for that month, and is defined as the 'proportion of the total Social Value generated by an active person that is linked to that person's activity inside the leisure centre'.⁶⁹ The Social Value generated month-by-month is then aggregated to generate total annual Social Value figure for each site.

Social Value estimates for both the Sandwell Aquatics Centre and Alexander Stadium were projected for the sites at their forecasted full maturity. This was calculated using the average Social Value from sites in DataHub with consistent data and who are of a similar size, with a similar facility type/mix as the Games venues.

Additional analysis was conducted of looking at the site-specific Social Value for 29 public leisure facilities in Games Host Local Authorities within Sport England's Moving Communities platform to inform analysis of the change in physical activity in the region before and after the Games. This included public leisure facilities across the Local Authorities of Birmingham, Sandwell, Walsall, Solihull, Wolverhampton, and Coventry⁷⁰ (with data from over 3,000,000 unique participants).⁷¹

This analysis specifically compared the annual Social Value generated by leisure centres in Games Host Local Authorities in the one year pre-Games (Q2 2021 to Q1 2022) to that generated in the one year post-Games (Q3 2022 to Q2 2023).⁷²

The change in Social Value was then compared to the trends and fluctuations in annual physical activity participation (see below), to consider whether any changes in Social Value associated with physical activity at the public leisure facilities in the Games Host Local Authorities could potentially be attributed to the Games. Two key data sources were used for this comparative analysis:

- The average year-on-year change in participation levels (average throughput) at 119 public leisure facilities sourced from 4GLOBAL's DataHub for the years 2014 to 2019 (pre-Covid times used as a control comparison).⁷³

⁶⁹ Note, a member can only generate Social Value within the SVC as long as he/she/they hit the activity thresholds within the leisure centre so no assumptions have been made for the person's activity levels for the months he/she doesn't use the leisure centre.

⁷⁰ Note, at the time of analysis (October 2023) there were no leisure facilities in Dudley submitting data to Moving Communities and therefore are not included in Social Value calculations.

⁷¹ Note, sites were only included if they reported consistent data via their Leisure Management Systems into Sport England's Moving Communities platform for the 12 months both pre-Games (between September 2021 – June 2022) and post-Games (between September 22 - August 2023).

⁷² Note, the quarter the Games took place in (Q2 2022) was excluded from analysis in order to get a true reflection of 'outside of Games-time' Social Value.

⁷³ Analysis consisted of 113 total consistent sites over this 5-year period from a variety of locations across England.

- The average year-on-year change in the proportion of Sport England's Adult Active Lives Survey respondents meeting the 'active' physical activity participation threshold (at least 150 minutes per week) for 2016 to 2019.⁷⁴

⁷⁴ Sport England. Active Lives. Levels of Activity. See: <https://www.sportengland.org/research-and-data/data/active-lives?section=measures>

5 Supply and demand modelling of Games venues

5.1 Overview

To understand the impact of the development of the Games venues, specifically the Sandwell Aquatics Centre and Alexander Stadium, on the availability, accessibility and quality of opportunities for local residents to be physically active across the seven Games Host Local Authorities, the Games-wide evaluation team, undertook a supply and demand modelling exercise using a gravity model latent demand approach.⁷⁵

The model uses 2.8 billion physical activity data points from over 23 million unique people across the UK captured in 4GLOBAL's DataHub to understand the projected impact of investment into the sport facilities and infrastructure as a result of the Games. Covering over 2,000 sport and physical activity venues from national sporting venues to leisure centres, analysing this data allows for a comprehensive understanding of which individuals are likely to participate (demand) and how demographic factors influence this propensity. Combining this with Sport England's Active Places Power dataset (supply) allows for the robust findings in relation to the pre-Games facility provision compared to the subsequent status after any Games investment and its effect on the local community across hosting Local Authorities.

Two iterations of the model were executed – one for the pre-Games analysis (control scenario), assessing the facility provision prior to any Games-related investment, and one post-Games investment, after the addition of the Sandwell Aquatics Centre and Alexander Stadium, to assess any direct attributable difference of introducing these facilities.

As part of this study the effect of investment from the Games in the Sandwell Aquatics Centre and Alexander Stadium was modelled across the following five key facility types:

- Health and Fitness Suites (Gym);
- Studios (Group Exercise);
- Swimming Pools;
- Athletic Tracks;
- Sports Halls.

It was modelled factoring no other investment into facilities such as Artificial Grass Pitches, Squash Courts and Tennis Courts was made at either site location. These additional facilities were consequently unaffected and remained constant when comparing pre-Games to post-Games investment.

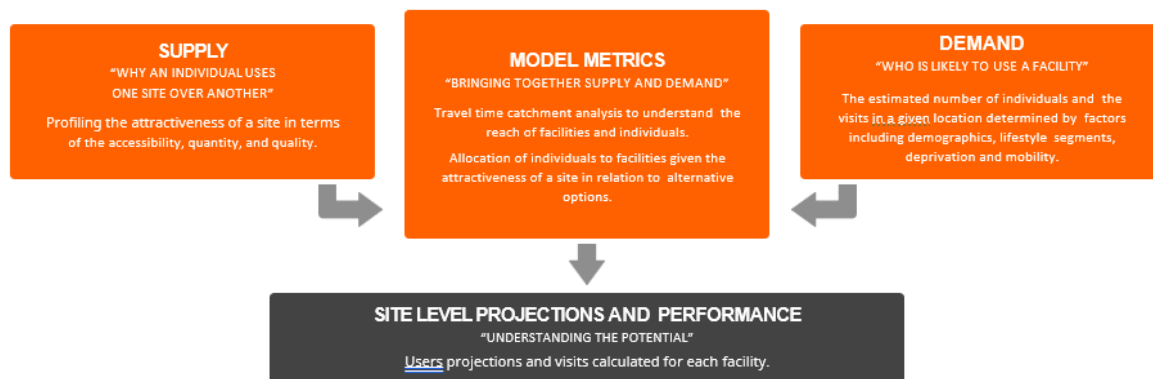
The modelling focused on the core seven Local Authorities that were responsible for hosting the Games - Birmingham, Coventry, Dudley, Sandwell, Solihull, Walsall, and Wolverhampton. The modelling was informed by live participation data from over 2.8 billion visits and over 23 million unique people across the UK sourced from 4GLOBAL's DataHub since 2012.⁷⁶

⁷⁵ ukactive (2018), Data insight service to revolutionise fitness facility planning. See: <https://www.ukactive.com/news/data-insight-service-to-revolutionise-fitness-facility-planning/>

⁷⁶ The DataHub is a sector initiative that aggregates sport and physical activity data from across the UK leisure industry. By connecting with leisure management systems and data capture systems, live participation data from over 2,500 venues, facilities and programmes feeds into the DataHub daily. This represents the largest collection of detailed and accurate activity

In its simplest form, the modelling takes into consideration the distribution of the local population, its demographic structure and participation trends (demand), as well as the capacity, availability and quality of facilities (supply) within their catchment areas. Using this data, the model can distribute demand from the Games areas to available facilities based on catchment areas, allocating people (demand) to facilities (supply) in terms of assumed realistic travel patterns and a site’s attractiveness. Figure 2 below provides an overview of the modelling process used to provide an expected usage of the Sandwell Aquatics Centre and Alexander Stadium, with a more detailed explanation of the modelling approach in the sections below.

Figure 2: Supply and demand modelling approach



Source: 4GLOBAL

5.2 Supply and demand modelling approach

The section below provides an overview of the supply and demand modelling approaches, and how they were combined to estimate the change in level of ‘unmet demand’⁷⁷ for Games Host Local Authorities as a result of Games-related investment into the Sandwell Aquatics Centre and Alexander Stadium.

5.2.1 Demand modelling approach

The demand modelling process harnesses information collected in 4GLOBAL’s DataHub to understand:

- which individuals are likely to use each facility type; and
- how different demographic profiles change a person’s propensity to visit.

For the purpose of this evaluation, demand is referred to as the “*number of individuals who engage in physical activity at the facility type twice in the last 28 days*”, which aligns to Sport England’s Active Lives participation category.

Analysis of population demographic information including age, gender, lifestyle (Experian Mosaic Profile)⁷⁸ and deprivation provides insight into how different people engage with physical activity and why a given individual is more likely to participate than another. These propensity rates vary by demographic group, and are then extrapolated across the UK to pinpoint number of individuals who demand use of each facility type at the Lower Layer Super Output Area (LSOA) geometry level.

data in the UK, and is frequently used to inform future planning and investment by operators, local authorities, and national funding and governing bodies. See: <https://web.datahubclub.com/>

⁷⁷ Individuals that are projected to use a facility type, but are unable to do so due to supply constraints (accessibility, quantity, quality).

⁷⁸ Experian, Mosaic Segmentation Groups and Types, <https://www.experian.co.uk/business/platforms/mosaic/segmentation-groups>

Population figures used in analysis were sourced from the 2021 ONS Census,⁷⁹ specifically data at LSOA level. Figures were then benchmarked to the Sport England Active Lives Survey (Nov 21-22 Edition) for the relevant sports.

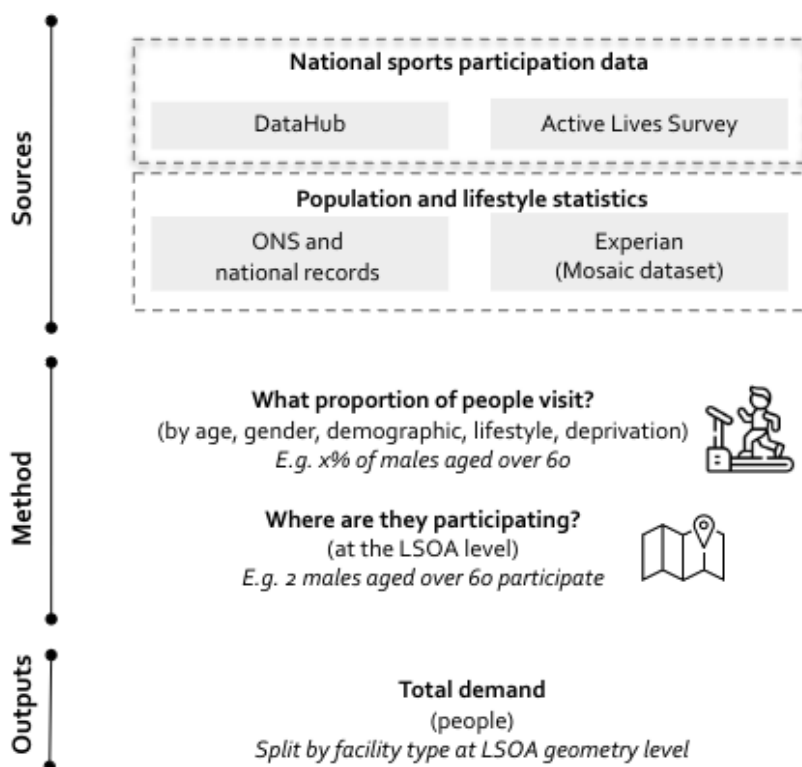
The demographic factors which influence an individual's propensity to visit (very poor to excellent) include:

- Risk of inactivity
- Health indicators
- Age
- Gender
- Deprivation
- Ethnicity
- Lifestyle segment
- Access to facilities
- Disability and mobility
- Employment status, job and income
- Education
- Car ownership and drivetime preferences
- Family makeup and number of children

Figure 3 below provides an overview of the demand modelling approach.

⁷⁹ Office for National Statistics. See: <https://www.ons.gov.uk/search?topics=9731,6646,3845,9497,4262,4128,7755,4994,6885,9724,7367&filter=datasets>

Figure 3: Demand modelling - inputs to outputs



Source: 4GLOBAL

5.2.2 Supply modelling approach

Supply refers to available venues or locations which provide the opportunity for individuals who desire to engage in the relevant physical activity to do so. The modelling seeks to understand the reasoning and logic behind an individual's decision to visit one site over another (in this instance, for example, the Sandwell Aquatics Centre over alternative aquatics centres), the capacity available across facilities, and ultimately the attractiveness of a given facility.

Supply audit

The sites and facility-specific details that were used in the supply modelling of the Sandwell Aquatics Centre and Alexander Stadium were sourced from Sport England's Active Places Power national audit. Only sites with the given facility types highlighted in the modelling overview⁸⁰ were considered in analysis.

For the pre-Games scenario, all facilities available to the public at the start of the Games were included in the analysis. This excludes the Sandwell Aquatics Centre and the Alexander Stadium post-refurbishment, but includes the Langley Swimming Centre and Smethwick Leisure Centre. For the post-Games scenario, both Langley Swimming Centre and Smethwick Leisure Centre were replaced (due to these facilities being closed) by the newly built Sandwell Aquatics Centre and the old Alexander Stadium was modelled as the refurbished new facility, thereby giving the opportunity to directly analyse any impact of the direct investment from the Games on the wider community.

The specific details of each site are set out on the Active Places Power website,⁸¹ with a summary of the facilities available. These are summarised in Table 15 below. The previous Alexander Stadium

⁸⁰ Health and Fitness Suites (Gym); Studios (Group Exercise); Swimming Pools; Athletic Tracks; Sports Halls.

⁸¹ Sport England, Active Places Power. See: <https://www.activeplacespower.com>

site was modelled with refurbished facility specifics (see Table 15) in place of the old site, whereas the Sandwell Aquatics Centre was a brand-new build facility.

Table 15: Supply modelling facility information

Facility Information	Sandwell Aquatics Centre	Alexander Stadium
Access Type	Pay and play	Pay and play
Ownership Type	Local Authority	Local Authority
Management Type	Local Authority (In-house)	Local Authority (In-house)
Year Built	2022	2022 (Refurbished)
Facility Mix	Health and Fitness Gym 1 - 108 stations Health and Fitness Gym 2 - 25 stations Sports Hall 1 – 697m2 (4 badminton courts) Sports Hall 2 - 697m2 (4 badminton courts) Cycle Studio 1 – 150m2 (32 bike stations) Fitness Studio 1 – 150m2 Fitness Studio 2 – 150m2 Fitness Studio 3 – 225m2 Swimming Pool (Main) – 1,250m2 Swimming Pool (Diving) – 525m2 Swimming Pool (Learner) – 200m2	Health and Fitness Gym 1 - 110 stations Fitness Studio 1 – 45m2 Fitness Studio 2 – 80m2 Fitness Studio 3 – 80m2 Athletics Track – 400m (8-lane)

Source: Active Places Power

Accessibility

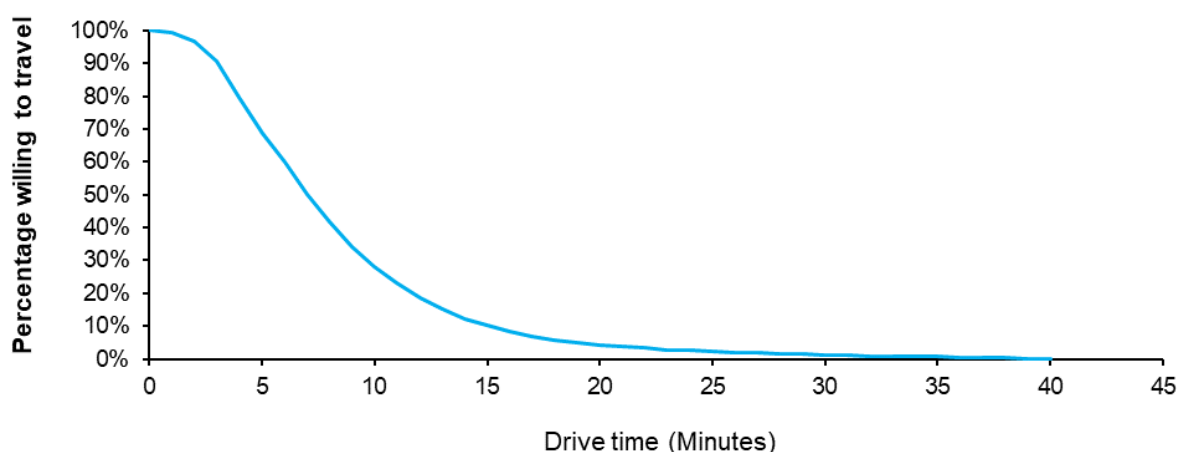
The availability of supply from neighbouring Local Authorities outside the Games Host areas has also been considered as part of the modelling. A 40-minute travel time catchment area was placed around each LSOA within Games Host Local Authorities for the following modes of transport - walking, cycling, driving and public transport. This is to identify the facilities within reach for different groups of individuals based on their travel time and modal preferences for physical activity. This travel time radius (40 minutes) was based on the 95th percentile accessibility area observed within DataHub for individuals travelling to facilities. Any site which was available within that catchment has been included within the modelling. The relevant travel areas around each of the facilities was sourced from the ArcGIS Drive-time Areas Tool.^{82 83}

Live participation data from DataHub is also analysed to estimate the “willingness to travel” of individuals by different demographic groups in order to access a facility type. In terms of accessibility of venues, the further the distance between an individual’s residential location and the site in question (i.e. the Sandwell Aquatics Centre and Alexander Stadium), the less willing they are likely to be to visit that centre. Figure 4 below shows how the increased travel time limits the number of people that are willing to travel that distance to use a facility.

⁸² ArcGIS Enterprise, Create Drive-Time Areas. See: <https://enterprise.arcgis.com/en/portal/10.5/use/create-drive-time-areas.htm#:~:text=The%20Create%20Drive%20Time%20Areas, network%20based%20on%20travel%20mode>.

⁸³ Note, any facility flagged as “Private Use” such as educational sites or private facilities, were excluded from the demand analysis as they are unavailable to the public for usage.

Figure 4: Impact of travel time on facility demand



Source: 4GLOBAL DataHub

Quality (Attractiveness)

The “attractiveness” of the Sandwell Aquatics Centre and Alexander Stadium was estimated via regression analysis using 4GLOBAL’s DataHub facility data. This analysis identifies the core common factors which drive an individual’s decision making and subsequently the percentage of members within a given LSOA that are projected to use the facility. An overview of the factors which the regression analysis shows influence a site’s quality are:

- Facility mix – The facility offer available at the site;
- Travel time – The proximity between the individual and the site in terms of walking, driving and public transport;
- Access type – The accessibility of the site to different user groups;
- Capacity – The size of the facility and the number of individuals can be accommodated during peak periods;
- Age of facility – The time since the facility was built or since it was last refurbished;
- Availability – The opening hours flexibility and seasonal trends of the facility;
- Management – The ownership and management type of the facility
- Additional amenities – Further details such as changing room availability, disability access and car parking.⁸⁴

Quantity (Capacity)

The capacity of a given facility type is referred to in terms of the number of visits per week that can be sustained before exceeding the “comfort threshold”.⁸⁵ Any site outperforming this threshold would be likely under-supplied particularly during peak periods, leading to a worsened user experience and potentially reduced return visits.

Considering this capacity on a “per unit” basis (for example, in the case of Health and Fitness Suites the “unit” refers to the “number of stations”, whereas Studio is “m2”), allows for the calculation of capacity at the Sandwell Aquatics Centre and Alexander Stadium, and provides an estimate of the

⁸⁴ Note, the price offer, either of a membership or pay-and-play hire at the facility, is not directly included in the attractiveness of the site due to a lack of available national audit data. However it is indirectly included via proxy variables such as ownership type and management type of facilities.

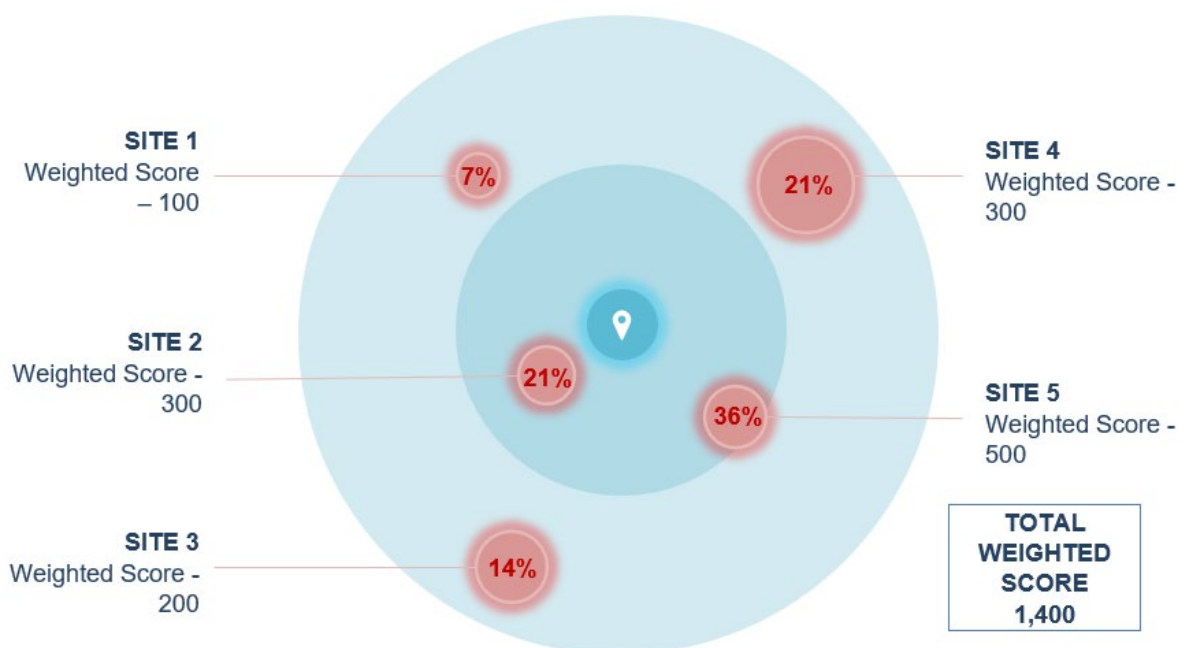
⁸⁵ In DataHub, every site is ranked 1 to 2500. The comfort threshold equates to the 90% percentile performance of the sector observed across all venues., in terms of weekly visits per unit of capacity.

available supply provision at each facility and then across Local Authorities split by each facility type studied.

5.2.3 Combining demand to supply

At the LSOA level, the projected demand (people) is proportionally allocated to each relevant site based on the weighted attractiveness of the Sandwell Aquatics Centre and Alexander Stadium in relation to other similar facilities within the LSOA’s catchment. This weighted attractiveness score combines all elements from quality, accessibility and quantity at the site-LSOA pair combination level. A total weighted score for each LSOA is calculated by summing the relevant site-LSOA pairs. The percentage of demand was then allocated to both the Sandwell Aquatics Centre and Alexander Stadium as a proportional reflection of the site-LSOA pair score out of the total weighted score. Figure 5 summarises this approach using hypothetical scores.

Figure 5: LSOA weighting approach



Source: 4GLOBAL

Supply index scoring

Across the three areas (accessibility, quantity and quality) a weighted index score was calculated for each Games Host Local Authority at the facility-type level. The below equations summarise the methodology behind each scoring system. A before- and after-Games analysis highlighted the percentage change in this index score following the introduction of the Sandwell Aquatics Centre and refurbishment of the Alexander Stadium.

Accessibility Index Score

$$\sum_0^n \sum_0^i d_n \cdot w_i$$

Whereby,

n = Number of LSOA areas within the Local Authority

i = Sites that reach that LSOA within a 40-minute drive

d = Total demand (in people) for that facility type

w = Willingness to drive percentage for the given site-LSOA pair

Quality Index Score

$$\sum_0^n \sum_0^i d_n \cdot \frac{a_i}{s}$$

Whereby,

n = Number of LSOA areas within the Local Authority

i = Sites that reach that LSOA within a 40-minute drive

d = Total demand (in people) for that facility type

a = Attractiveness score of the facility (excluding weighted travel time decay)

s = Sector 75th percentile score for attractiveness (excluding weighted travel time decay) within that given facility type

Quantity Index Score

$$\sum_0^n \frac{d_{in} \cdot \sum d_i}{(\sum d_i) - c_i}$$

Whereby,

n = Number of LSOA areas within the Local Authority

i = Sites that reach that LSOA within a 40-minute drive

d = Total demand (in people) for that facility type

c = Total capacity for the facility type

Estimating 'unmet' demand

Unmet demand refers to individuals that are projected to use a facility type, but are unable/ unwilling to due to one of the three abovementioned supply side constraints:.

- Accessibility – People that cannot reach a facility within the willingness to travel range
- Quantity – People who cannot use a facility because there is not enough capacity for them to visit
- Quality – Whereby the quality of facilities does not meet the expected standard observed by the 75th percentile nationally

Each LSOA for the Commonwealth Games Local Authorities was considered in isolation in analysis, with the relevant facilities within a 40-minute travel time. Modelling was initially conducted at the site–LSOA pair and then results aggregated to an overall LSOA finding. As a result, an under-performance

of a particular site in a given metric can counteract or negate completely an over-performance from another facility within the LSOA. For example, if one facility's quality was sufficiently poor this will generate some unmet demand, however another facility in the same LSOA's catchment with better quality may cater for the demand and consequently there would not be any unmet demand.

For the purpose of this evaluation, similar to the index scoring, unmet demand was estimated at the LSOA geometry and aggregated up to the Games Host Local Authority level for the analysis. The change in unmet demand resulting from the introduction of both the new Sandwell Aquatics Centre and refurbished Alexander Stadium was measured in terms of unique people (users) for each pre- and post-Games scenario, and each facility type.

Considerations and any limitations

The model factors in many factors from both a supply and demand perspective, however not every potential influence on an individual's decision-making process can be mathematically modelled. Certain criteria such as the friendliness of reception staff or the perceived quality of group workout instructors are subjective on an individual basis and are unquantifiable from a supply perspective. Using the vast variety of data, proxy calculations given the management type, ownership type and facility specifics are used to give a general influence of these variables, but they are not considered in their own right.

Sites within the host Local Authorities will be included within the over 2,000 sample size which originated from DataHub however actual usage of sites and individuals participating are not used to input into the model at the local level in this research. The figures provided are a modelling projection for the sites within each area and as such are not actual usage. These modelling projections are subject to bi-annual testing across all sites nationally to ensure the models accuracy and relevance by contrasting the projected demand at facilities and the actual usage observed.

In terms of the supply audit, Sport England's Active Places Power audit was used as the baseline for this analysis. Routine validation and crosschecks are done by Sport England and the relevant contracted team to ensure the completeness and accuracy of information. It should be noted that in certain cases this is not a fully complete audit and information may be outdated. As part of this analysis, a desktop check was conducted to validate sites within host Local Authorities to mitigate any potential missing sites or incorrect information.