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*The Economic Importance of Olympic and Paralympic Sport*

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## EXECUTIVE SUMMARY

### INTRODUCTION

UK Sport commissioned the Sport Industry Research Centre (SIRC) at Sheffield Hallam University to produce a 'Satellite Account' for Olympic and Paralympic sports, in order to quantify their economic importance to the UK economy. The methods employed are consistent with the Government's 2014 estimates for the sport industry as a whole produced by the Department for Culture, Media and Sport.

All developed nations use a System of National Accounts for reporting the economic scale of industries. National Accounts use an extensive coding system based on hierarchies that cluster economic activities into increasingly precise categories. A limited definition of sport is identified in a few of these categories (the statistical definition) with most economic activity diluted within National Accounts in broadly classified industries such as recreation, manufacturing, and retail.

The *Sporting Future* policy asks sports to quantify and report on their economic scale and significance, with employment being a *Key Performance Indicator*. UK Sport can therefore be seen to be taking an important leadership role in quantifying the economic scale of Olympic and Paralympic sports.

### METHODS

The 'Economic Importance of Olympic and Paralympic Sport', is produced using the UK Satellite Account for Sport (SSA) for 2014 as its base and as a test of reasonableness. The Satellite Account technique has been used widely in the EU to measure the size of economic sectors that are not identified explicitly in the National Accounts. The current research into Olympic and Paralympic sport is the first time that the methodology has been applied to a portfolio of sports. Also it is the first time that the distinction between 'statistical', 'narrow' and 'broad' definitions of sport as outlined in the Vilnius Definition<sup>1</sup> of sport has been made in the UK. These three definitions refer to the sport-related economic activities that can be identified explicitly in the national statistics (e.g. sport facilities); the economic activities required to play sport (e.g. manufacturing of sport equipment); and, the economic activities that use sport as an input in the production process (e.g. sport betting) respectively.

Satellite Accounts analyse industries from four perspectives:

- Gross Value Added (GVA);
- Employment (head count and full time equivalent jobs);
- Consumer spending, and
- Turnover.

In addition, indirect effects (associated with the underlying supply chain activity) are calculated in the cases of GVA, employment and turnover giving a comprehensive economic impact for Olympic and Paralympic sports.

Certain sports such as golf, tennis, football and rugby were excluded because the Olympic and/or Paralympic Games are not the pinnacle of achievement in these sports. The five new sports for Tokyo 2020 are included to enable like for like comparisons to be made in future updates of this study.

Four main sources are used to acquire the relevant data:

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<sup>1</sup> The Vilnius Definition of sport is explained in sections 1.2, 1.3 and 2.1 of the main report.

- National data sets (for example the Annual Business Survey and Annual Survey of Hours and Earnings);
- Sport participation datasets such as the Active People Survey and the Taking Part Survey,
- Analysis of company accounts (almost half a million businesses with an income and expenditure statement); and
- The 2014 Input Output Tables and the most recent Analytical Tables for the UK economy.

## KEY FINDINGS

### Gross Value Added (GVA)<sup>2</sup>

The Gross Value Added of Olympic and Paralympic sports in the UK was £18,900 million in 2014 with the largest single area being summer Olympic sports, generating £16,104m (85%) of this GVA. The GVA of Olympic and Paralympic sport is equivalent to 55% of the whole sport industry, as estimated by DCMS. The GVA is largely a function of the pattern of participation (or demand) among sports. For this reason, the sector is driven by Athletics, Swimming and Cycling. When both direct and indirect effects are taken into account, the importance of the sector increases to £29,979m.

GVA £m	Statistical Definition		Narrow Definition		Broad Definition	
	£m	%	£m	%	£m	%
Summer Olympic sport	£2,026	12.6%	£9,265	57.5%	£16,104	100%
Winter Olympic sport	£115	16.9%	£374	55.1%	£678	100%
Paralympic sport	£217	10.4%	£1,110	53.2%	£2,085	100%
Total direct effect	£2,358	12.5%	£10,749	57.0%	<u>£18,867</u>	100%
Total direct and indirect effect					<u>£29,979</u>	

### Employment

The Olympic and Paralympic sector provides employment for 623,000 people (head count). This is equivalent to 480,000 full-time equivalent employees when adjusted for part-time workers. The sector generates employment equivalent to 55.7% of all sport employment (DCMS) and 2.1% of total employment nationally. Most employment occurs in Olympic summer sport followed by Paralympic sport and Olympic winter sport. When the indirect effects are taken into account, the sector generates approximately one million jobs.

Employment (head count)	Statistical Definition		Narrow Definition		Broad Definition	
	Head count	%	Head count	%	Head count	%
Summer Olympic sport	68,600	12.9%	326,000	61.2%	532,500	100%
Winter Olympic sport	3,900	18.8%	12,700	61.2%	20,700	100%
Paralympic sport	7,300	10.5%	38,800	55.5%	70,000	100%
Total direct	79,800	12.8%	377,500	60.6%	<u>623,200</u>	100%
Total direct and indirect effect					<u>1,018,000</u>	

<sup>2</sup> Gross Value Added measures the contribution to the economy of each individual producer, industry or sector in the UK, and approximates to the sum of gross profits and wages/salaries.

### Consumer spending

Consumer spending on Olympic and Paralympic sport in the UK was found to be £19,766 million which is equivalent to £306 per head of population over the year 2014. This is equivalent to 1.7% of overall household spending. Almost a quarter of consumer spending on sport is located in the statistical definition of sport (as opposed to the narrow or broad definitions), which is a considerably higher percentage than in the cases of GVA and employment.

Consumer spending £m	Statistical Definition		Narrow Definition		Broad Definition	
	£m	%	£m	%	£m	%
Summer Olympic sport	£4,357	26.3%	£11,054	66.8%	£16,540	100%
Winter Olympic sport	£247	22.8%	£783	72.2%	£1,085	100%
Paralympic sport	£468	21.9%	£1,379	64.4%	£2,141	100%
Total	£5,072	25.7%	£13,216	66.9%	<u>£19,766</u>	100%

### Turnover

Turnover, or the total economic activity associated with Olympic and Paralympic sport is also comprised of: direct effects such as the operation of clubs; and indirect effects, such as supply chain activity. The turnover associated with these effects on Olympic and Paralympic sport is £73,408 million as indicated below. Almost half of the turnover identified is produced indirectly through the supply chain.

Turnover £m	Statistical Definition		Narrow Definition		Broad Definition	
	£m	%	£m	%	£m	%
Summer Olympic sport	£5,686	18.2%	£18,698	59.8%	£31,277	100%
Winter Olympic sport	£323	24.0%	£777	57.7%	£1,347	100%
Paralympic sport	£611	15.2%	£2,229	55.5%	£4,015	100%
Total direct	£6,620	18.1%	£21,704	59.2%	<u>£36,639</u>	100%
Total direct and indirect effect					<u>£73,408</u>	

### The sporting context

The value of sport as a whole in the UK has been reported by the Department for Culture, Media and Sport using the Satellite Account methodology. Comparing our Olympic and Paralympic data with the DCMS' overall sport data reveals that Olympic and Paralympic sport is the main component of the sport industry accounting for: 55% of the sector's GVA and 55.7% of its employment. As shares of the national economy, Olympic and Paralympic sport generates 1.2% of GVA, 2.1% of employment and 1.7% of consumer spending respectively. Olympic and Paralympic sport is an industry which is larger than three entire sectors of the UK economy, notably the agriculture, forestry and fishing industry.

Measure	Olympic and Paralympic sport (2014)	Sport (2014)	% of the sport economy	% of the UK economy
GVA	£18.87 billion	£34.30 billion	55.0%	1.2%
Employment	623,000	1,119,000	55.7%	2.1%
Consumer spending	£19.77 billion	n/a	n/a	1.7% (households)
Turnover	£36.64 billion	n/a	n/a	1.2%

### Conclusion

This report has shown that Olympic and Paralympic sport is fundamental in creating GVA and employment within the overall sport industry, accounting for the majority of the output produced. Its contribution to employment at 2.1% is much higher than the contribution of GVA (1.2%) implying that growth in Olympic and Paralympic sport will result in an accelerated rate of growth in employment so long as the supply side infrastructure flexes to accommodate increased demand. In addition, this report is the first example of the UK sport industry being analysed separately by the three component parts of the Vilnius Definition of sport.

Generally the statistical definition for GVA, employment and turnover ranged between 12% and 18%. However, in the case of consumer spending the statistical definition was much higher at 25.7%, which reflects the economic importance of charges for taking part in sport. Future research on the economics of sport should investigate the significance of sport volunteering, which is not included in the Vilnius Definition, and the growth in sport employment. The five outcome areas of *Sporting Future* also require research into the social value of elite sport and this is underway in complementary research.

The UK now has a transparent audit trail of evidence by which to value the economic importance of Olympic and Paralympic sport, which is consistent with the DCMS's Sport Satellite Account. This position represents a strong basis from which to monitor the development of Olympic and Paralympic sport in future years.

## 1. INTRODUCTION

### 1.1. The project

In response to the Government's new strategy for sport, *Sporting Future*<sup>3</sup>, UK Sport commissioned the Sport Industry Research Centre (SIRC) to quantify the economic importance of Olympic and Paralympic sport for the year 2014. *Sporting Future* recognises the contribution of sport to wider social outcomes such as physical and mental wellbeing; individual development, community development and economic development. The rationale for being consistent with Government policy is captured succinctly in the quote below:

The economic impact of sport, how it creates jobs, promotes growth and drives exports is a fundamental part of this new strategy. We will ask organisations to consider not just how they contribute to the nation's health or wellbeing, but to the economy as well, both nationally and locally. [Sporting Future, page 77]

The year 2014 was chosen as the base for the research for two key reasons. First, there is existing research on the economic value of sport as a whole to the UK economy in the form of a Satellite Account for Sport published by DCMS for 2014, which is recognised as an Official Statistic. It follows, that Olympic and Paralympic sport is a subset of all sport, and therefore as a test of reasonableness we would expect the economic importance of Olympic and Paralympic sport to be a proportion of the overall total for sport. The research challenge therefore, was to produce a credible estimate for Olympic and Paralympic sport that was consistent with the overall Satellite Account for Sport.

Second, 2014 is the latest year for which all of the data required to produce the Olympic and Paralympic Satellite Account are available and therefore for pragmatic reasons it was not possible to produce a more contemporary version. The 2014 Olympic and Paralympic Satellite Account is the midpoint of the London 2012 and Rio 2016 Olympic and Paralympic cycles and is also the year of the Sochi 2014 Winter Olympics and Paralympics.

### 1.2. Background

Developed nations use an internationally standardised framework known as the System of National Accounts (SNA) to report the economic scale of specific industries. Outlines of the structure of the UK's National Accounts and an insight into Section A (Agriculture) are shown in Table 1.

**Table 1: The structure of the UK's National Accounts**

Structure	Number	Abbreviated Examples
Sections	21	A: Agriculture, forestry and fishing
Divisions	88	01: Crop and animal production
Groups	272	01.1 Growing of non-perennial crops
Classes	615	01.11 Growing of cereals
Sub Classes	191	No sub classes to 01.11

<sup>3</sup> HM Government (2015) *Sporting Future: A New Strategy for an Active Nation*, (HM Government), London.

The four digits used for the 615 'Classes' shown in Table 1, for example 01.11, are commonly known as Standard Industrial Classification codes or SIC codes.

Sport, in its totality, is not recognised as an industry within the framework of National Accounts. However, as will be shown later, sport and sport-related economic activity is found to varying extents in 182 out of 615 SIC codes. Throughout Europe, the method used to identify sport's contribution to the economy is the production of a 'Satellite Account'. The Satellite Account technique was developed by the United Nations to measure the size of economic sectors that are not defined as specific industries in the National Accounts, but which are clearly linked to the economy. In the UK there is a tourism Satellite Account, a Satellite Account for sport (SSA), and more recently a Satellite Account for golf. Satellite Accounts usually analyse industries from four perspectives.

- Gross Value Added (GVA), which is the core of the National Accounts, and is defined as the profits plus wages within an industry, less an adjustment for taxation and subsidies. GVA is a proxy for Gross Domestic Product (GDP), the key measure of the scale of an economy.
- Employment is reported as a head count of employees and the self-employed to quantify the number of workers, and as Full Time Equivalents to quantify the number of jobs.
- Consumer spending, which is defined as the spending of individuals and households on sport-related goods and services.

The fourth, less commonly used measure is turnover, which captures the revenue flows associated with a given level of GVA. In order to generate £1,000 in wages and profits it might be necessary for a business to have a turnover of £1,800. This would include spending on all of the inputs required in the production process. Turnover is estimated by using appropriate industry specific ratios derived from the Input-Output Tables (IOT) of the UK.

To date UK Sport's strategy has been to use its resources to support Olympic and Paralympic sports in order to achieve medal success. According to UK Sport's 'Investing in Sport' principles:

At the heart of our investment approach is our philosophy of targeted investment to support all credible medal potential within the high performance system. This approach focuses the resources available towards athletes and sports with the greatest chance of succeeding on the world stage, across an eight year pathway.....This approach, along with record levels of investment from the National Lottery, Exchequer and Team 2012 helped Great Britain achieve 67 Olympic medals and 147 Paralympic medals at Rio 2016 and four Olympic and six Paralympic medals at Sochi 2014<sup>4</sup>.

Prior to *Sporting Future*, there was no explicit requirement for sports to quantify and report on their economic scale and significance. The new policy direction requires taking a different perspective on the 'performance' of sport and to use a rather different vocabulary. UK Sport can therefore be seen to be taking an important leadership role in quantifying the economic scale of Olympic and Paralympic sport. As the distributor of £345m in the Tokyo cycle and a further £30.5m in the PyeongChang cycle it is of value to UK Sport and the national governing bodies of sport it supports, to know the economic significance of their activities. For the purposes of clarity, the key performance indicator stated in *Sporting Future* for measuring economic development through sport is employment as estimated in the Department for Culture, Media and Sport's Sport Satellite Account:

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<sup>4</sup> <http://www.uk sport.gov.uk/our-work/investing-in-sport>

*Key Performance Indicator 16: Employment in the sport sector (from the Sport Satellite Account)*

Employment is however but one measure and this research goes beyond employment to include Gross Value Added, consumer spending, and turnover.

The research aims of this report are to:

- Outline the economic groupings in the UK's System of National Accounts which contain Olympic and Paralympic sport activities;
- Estimate the GVA for each Olympic and Paralympic sport;
- Estimate employment for each sport;
- Estimate the associated consumer spending on these sports using the Vilnius Definition of sport (see explanation later);
- Estimate turnover for each sport; and
- Contextualise the research relative to the DCMS's 2014 Satellite Account for Sport.

The 'Economic Importance of Olympic and Paralympic Sport', is produced using the UK Satellite Account for Sport (SSA) for 2014 as its base and as a test of reasonableness. The 2014 SSA estimates the GVA and employment generated by the UK's sport economy to be £34.3bn and 1.119 million jobs (head count) respectively, which values the sport economy at 2.1% of total UK GVA and 3.6% of employment. The UK SSA is explicitly constructed to be consistent with the internationally agreed 'Vilnius Definition' of sport<sup>5</sup> which provides the most conceptually robust description of the sport industry.

The focus of this research is on those sports for which the Olympic and Paralympic Games are the pinnacle of sporting achievement. Consequently we have excluded four Olympic sports in golf, tennis, football and rugby because the Olympic Games is not the pinnacle of achievement in them. Other popular sports such as motorsport, snooker and cricket are also excluded because they are not Olympic or Paralympic sports. However, in order to replicate the study meaningfully in future years, we have included in the analysis the five new sports for Tokyo 2020, namely: baseball / softball; climbing; karate; skateboarding; and surfing.

Table 2 shows the headline findings from the research. The total GVA generated by Olympic and Paralympic sport is approximately £18.9 bn. It equates to 55% of the overall sport GVA and 1.2% of total GVA for the economy as a whole, generating approximately 623,000 jobs. Olympic and Paralympic employment is equivalent to 2.1% of total employment, highlighting sport's capacity to generate jobs at a greater rate than suggested by its GVA share of the economy. This, as Table 2 illustrates, is equivalent to 56% of the overall sport employment detailed in the UK SSA.

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<sup>5</sup>[http://ec.europa.eu/eurostat/documents/6921402/0/Vilnius+Definition+Sport+CPA2008+official+2013\\_09\\_19.pdf/30838d11-01ea-431f-8112-50786e187c1c](http://ec.europa.eu/eurostat/documents/6921402/0/Vilnius+Definition+Sport+CPA2008+official+2013_09_19.pdf/30838d11-01ea-431f-8112-50786e187c1c)

**Table 2: Value of Olympic and Paralympic Sport, UK 2014**

Indicators	Units
Olympic and Paralympic GVA	£18.9 billion
Olympic and Paralympic GVA as % of sport GVA:	55.0%
Olympic and Paralympic GVA as % of total GVA:	1.2%
Olympic and Paralympic GVA, employment	623,000
Olympic and Paralympic employment as % of sport employment	55.7%
Olympic and Paralympic employment as % of total employment	2.1%

### 1.3. Positioning the research

In 2006, an initiative of the Austrian EU Presidency led to the development of a framework for Sport Satellite Accounts and the establishment of an EU Working Group on Sport & Economics (WG). The first meeting of the group took place in Vienna on 27 and 28 September 2006 at the invitation of the Austrian government.

There was consensus in Vienna that the activities of the WG would have three main purposes:

- To measure the sport sector as a percentage of GDP and the effects of sport on employment, value added, and purchasing power in the Member States as well as at EU level;
- To measure the dynamics of the sport sector over time; and
- To have reliable data as a basis for future decision-making relevant to the sport sector.

In most EU member states, in the absence of an SSA methodology, the contribution of sport to the economy is significantly underestimated. Basic statistical publications by many Member States contain no information on the sport sector at all, yet studies in those nations which have used the SSA approach indicate that sport makes a considerable and growing contribution to their economies. Since the System of National Accounts in each country focuses on a small fraction of what is generally understood to be sport, the contribution of sectors other than those explicitly addressed is generally ignored. For instance, sport plays an important role in retail trade and tourism; however the sport industry does not receive recognition for this role in terms of GVA or employment as the relevant data are reported in different areas of the National Accounts. This finding implies that there is a discrepancy between the statistical reporting of the sport sector within National Accounts and the common understanding of what constitutes sport activities. For this reason, the WG set out to encourage Member States and the EU as a whole to derive better statistical data on sport. To achieve this aim, it was decided that it would be useful to create a Sport Satellite Account in the Member States and, at a later stage, the EU as a whole.

To date seven countries (Austria, Cyprus, Germany, the Netherlands, Poland, Lithuania and the UK) have produced a Sport Satellite Account (SSA). The UK is the only country to have produced a SSA for most years since 2004 and it is now produced annually by the Office for National Statistics. The latest year we have confirmed data for is 2014, which provides the background test of reasonableness for the current study into Olympic and Paralympic sport.

To complement the UK SSA, we have derived a methodology for providing estimates of the economic importance of sport for specific sports that are consistent with the SSA. In this sense, the most important development has been the SSA for Golf<sup>6</sup> in the UK and the Republic of Ireland<sup>7</sup>. The key findings in both reports were centred on GVA, employment, consumer spending and turnover. The approach used was transparent, replicable and consistent with the UK's National Accounts.

Underpinning these applications of the Sport Satellite Account methodology is the 'Vilnius Definition' of sport which has been used to determine the Standard Industrial Classification (SIC) codes of economic activities which are associated with sport. The Vilnius Definition has been the common denominator across all SSA research in Europe. As the WG policy paper on SSAs has underlined, at the European level, economic activities are measured within a specific statistical nomenclature called NACE (*Nomenclature statistique des Activités économiques dans la Communauté Européenne*). Within it, NACE category 93.1 "Sporting Activities" is identified as the core 'statistical definition' of sport in the National Accounts. This category includes sport facilities for participation and spectating purposes as well as the activities of professional and community clubs. Sport is contained within Section R of the UK's National Accounts and a breakdown of the Section as a whole and the SIC codes relevant to sport are listed below.

### **Section R Arts, Entertainment and Recreation**

- 90 Creative arts and entertainment activities
- 91 Libraries, archives, museums and other cultural activities
- 92 Gambling and betting activities
- 93 Sports activities and amusement and recreation activities**
  - 93.1 Sports activities
    - 93.11 Operation of sports activities
    - 93.12 Activities of sport clubs
    - 93.13 Fitness facilities
    - 93.19 Other sports activities
      - 93.19/1 Activities of racehorse owners
      - 93.19/2 Other sports activities not elsewhere classified

However, to limit the sport sector to Division 93 of the Nation Accounts is quite arbitrary from an economic point of view. Another, conceptually better, definition of the economic sport sector encompasses all industries which produce goods that are necessary to play sport. In addition to sport facilities, this definition includes, for example, manufacturing of sport clothing and footwear as well as sports equipment. The latter definition (together with the statistical definition) is referred to as the '**narrow definition of sport**'. In addition to these two measures, the so-called '**broad definition of sport**' includes not only the statistical definition and the narrow definition, but also relevant parts of

<sup>6</sup> SIRC: A Satellite Account for Sport in the UK, 2016, a research supported by the R&A (<http://www.sportstinktank.com/uploads/economic-impact-of-golf.pdf>)

<sup>7</sup> SIRC: A Satellite Account for Golf in the Republic of Ireland, 2016, a research supported by the R&A and CGI, (<https://www.golfnet.ie/News%20Listing%20Assets/CGI%20Report%20Economic%20Impact.pdf>)

the industries for which sport is an important input for their production processes, e.g. television broadcasting. It is this broad definition of sport that has been reported in SSAs to date. The Vilnius Definition was updated in a Pan European workshop organised by the European Commission, SIRC and SpEA in Brussels, in 2017. This report on Olympic and Paralympic sport, divides all the major outputs into 'statistical', 'narrow' and 'broad' definitions of the sport industry. To the best of our knowledge this is the first time that separate identification of the three components of the Vilnius Definition of sport has been attempted in the UK. The distribution of the sport-related economic activities among the three definitions can be seen in full in Table A1 of the Appendix ('Mapping of the UK Olympic and Paralympic sport industry'). Of the 615 SIC codes that comprise the UK's National Accounts, sport-related activity was found in 182 of them. Of these 182 SIC codes: 4 relate to the statistical definition; 85 relate exclusively to the narrow definition; and, 93 relate exclusively to the broad definition. All of the economic activity found in the statistical definition relates directly to sport. By contrast, for the SIC codes in the narrow and broad definitions only a proportion of the economic activity relates to sport.

#### **1.4. Participation rates**

Participation data were used to derive an estimate for the number of participants in each sport, which has been used subsequently as one of the determinants of the economic scale of a sport. Two frequencies were considered: at least once a week and at least once every four weeks using the results from two national surveys: the Active People Survey (APS) and the Taking Part Survey (TPS).

The most appropriate participation rates for the year 2014 were found in APS 2013/14 (each 12 month wave starts in October) and TPS 2014/15 (each 12 month wave starts in April). When comparing the participation rates between APS and TPS, it became obvious that TPS reports marginally higher participation rates than APS, across almost all popular sports. After reviewing the questionnaires and the methods employed to collect the data, we propose three possible explanations for the variances.

1. TPS is a face to face survey conducted in the home whilst APS is conducted via telephone.
2. A typical TPS interview lasts an average of 45 minutes compared with 18 minutes in the case of APS.
3. TPS uses 'showcards' to list activities on a screen that the interviewee can see, whereas APS asks open questions which depend upon memory recall. The advantage of showcards over open questions is that they provide prompts that assist memory recall.

For well-established sports, we have adopted the TPS estimates as more reliable estimates of participation (or 'demand'). However APS has an important role to play because its large sample size of c. 150,000 respondents per wave helps to identify the scale of demand for less popular sports.

Finally, we chose participation at a frequency of 'once every four weeks' in favour of 'once a week'. The rationale for this decision is because we consider that a lot of the economic activities associated with sport (such as spending on membership fees, clothing and equipment) would be 'triggered' by a simple participation decision without having to commit to a more intensive frequency of participation.

Table 3 details the participation rates for adults (16 years old and above). Where possible children's participation rates were also taken into account using the Taking Part Children's Survey, as it was found that a considerable amount of commercial activity is driven by children's participation (e.g. in gymnastics). Paralympic sport participation rates are based on APS and TPS data. Some Paralympic sports are identified explicitly within the surveys, notably:

- Wheelchair archery;
- Wheelchair basketball;
- Wheelchair tennis;
- Powerlifting;
- Wheelchair table tennis;
- Wheelchair rugby and
- Boccia.

To derive participation rates for the remaining Paralympic sports that were not identified separately, we applied a filter to the overall dataset (for each sport). This filter included all respondents who reported having visual, hearing, mobility, breathing and dexterity disabilities. Once this filter was applied, it was possible to separate out estimates for participation rates in each Paralympic sport and then to subtract this figure from the corresponding Olympic sport participation rate. Sports using this method included: Alpine skiing; athletics; badminton; canoe; cycling; equestrian; football; judo; rowing; sailing; shooting; volleyball; snowboarding; swimming; wheelchair curling, and wheelchair fencing.

Amongst the Olympic sports, the highest participation rates are found in athletics, cycling, swimming and children's gymnastics, with all of them exceeding the 5% mark. Winter Olympic sports have lower participation rates, with the highest being ice-skating (0.67% adults, 3.0% children). In Paralympic sports, swimming, cycling and athletics have highest adult participation rates at 1.6%, 0.8% and 0.4% respectively. It is important to note that the sum total of participants is not the same as the number of unique participants. There are some people who participate in more than one sport and who will be counted multiple times. However, the approach of counting participants per sport is appropriate because even those who take part in multiple sports will still have to pay to participate and to purchase the necessary equipment and clothing.

Table 3: Participation rates, Olympic and Paralympic Sports, 2014

Olympic Sport	Adult participation	Child participation	Adult participants	Child participants
Archery	0.33%		173,064	
Athletics	8.30%	6.12%	4,355,238	466,748
Badminton	2.29%	2.23%	1,202,499	164,069
Basketball	1.08%	4.02%	565,125	307,324
Boxing	0.79%	1.60%	414,304	130,031
Canoeing (or rowing in children)	0.61%	0.46%	318,045	66,937
Cycling BMX	0.16%		84,996	
Cycling Mountain Bike	1.75%		917,762	
Cycling Road	3.35%		1,756,858	
Cycling Track	0.17%		89,664	
Cycling in children		24.05%		1,770,160
Swimming/Diving	13.81%	39.04%	7,242,985	2,804,878
Equestrian Dressage	0.13%		68,177	
Equestrian Jumping	0.11%		57,688	
Equestrian – combined	0.86%	2.03%	451,014	278,429
Fencing	0.05%		26,222	
Gymnastics (& trampoline in children)	0.26%	10.34%	136,353	840,327
Handball	0.02%		12,062	
Hockey	0.33%	1.40%	173,064	113,777
Judo, (or martial arts in children)	0.07%	6.10%	36,710	458,993
Rowing	0.46%		241,240	
Sailing	0.37%		192,450	
Shooting	0.78%		406,572	
Table Tennis	1.74%	3.95%	913,108	297,284
Taekwondo	0.09%		47,199	
Trampoline	0.08%		41,955	
Triathlon	0.15%		78,665	
Volleyball	0.36%	0.49%	189,561	37,249
Water Polo	0.03%		15,733	
Weightlifting	2.28%		1,195,713	
Wrestling Freestyle	0.004%		2,098	
Wrestling Greco-Roman	0.004%		2,098	
Baseball and softball	0.05%	0.90%	26,222	73,143
Karate	0.21%		110,131	
Skateboarding	0.10%		52,444	
Climbing	0.72%		377,593	
Surfing	0.20%		104,887	

<b>Winter Olympic Sport</b>				
Alpine Skiing	0.22%		115,376	
Free Style Skiing	0.05%		26,222	
Cross Country Skiing	0.01%		5,244	
Curling	0.02%		12,551	
Ice Skating	0.67%	3.1%	351,371	251,935
Ice Hockey	0.03%		15,733	
Nordic Combined	0.05%		26,222	
Snowboard	0.06%		31,466	
<b>Paralympic Sport</b>				
Skiing	0.02%		9,831	
Athletics	0.37%	0.38%	193,802	30,622
Badminton	0.17%	0.21%	87,612	17,162
Boccia	0.01%		3,671	
Canoe (or rowing in children)	0.07%	0.04%	38,571	2,955
Wheelchair Archery	0.01%		3,289	
Cycling	0.76%	2.22%	399,162	180,309
Equestrian	0.07%	0.31%	37,173	25,519
Football	0.29%	3.29%	149,657	267,661
Judo (or martial arts in children)	0.02%	0.45%	12,888	36,751
Power lifting	0.02%		10,489	
Rowing	0.02%		11,190	
Sailing	0.11%		59,279	
Shooting	0.14%		75,909	
Sitting Volleyball	0.01%	0.03%	4,480	2,573
Swimming	1.56%	4.53%	817,586	367,884
Table Tennis	0.11%	0.29%	57,097	23,731
Taekwondo	0.01%		4,599	
Triathlon	0.01%		4,608	
Wheelchair Basketball	0.07%	0.24%	37,975	19,380
Wheelchair Curling	0.01%		3,086	
Wheelchair Fencing	0.01%		5,011	
Wheelchair Tennis	0.14%	0.40%	73,112	32,810

## 1.5. Report structure

The rest of the report is structured as follows:

- Section 2 outlines the methods employed, including the construction of a 'sport grid' for the distribution of GVA and employment among sports;
- Section 3 outlines the estimation of sport specific GVA;
- Section 4 provides estimates for: employment, consumer spending and turnover in Olympic and Paralympic sports;
- Section 5 presents case studies on cycling, gymnastics and the five new Olympic sports;
- Section 6 examines the indirect effects on GVA, employment and turnover;
- Concluding comments are presented in section 7; and
- the Appendices provide more detailed data on the headlines included in the main body of the report.

## 2. METHODS

### 2.1. Underpinning methods

The estimation of the Olympic and Paralympic SSA involved undertaking a systematic sequence of tasks as outlined below.

- Approximation of GVA and employment in the economy as a whole according to four digit SIC codes.
- Estimation of 'sport shares' in GVA leading to sport-related GVA and employment.
- Estimation of full time equivalent sport employment, by using full time employment statistics.
- Estimation of consumer spending (households) and turnover using appropriate ratios from the National Accounts.
- Distribution of sport related GVA, employment, consumer spending and turnover across sports to derive the Olympic and Paralympic sport components.
- Classification of all the sport estimates according to the statistical, narrow and broad definition (as defined within the Vilnius Definition of sport).
- Estimation of indirect effects in GVA, employment and turnover.

Our analysis is consistent with the Vilnius Definition of sport, which articulates the consensus reached at European Union level and which included the active participation of the UK<sup>8</sup>. The research presented in this report uses the key sources listed below as its basic inputs.

1. Examination of the commercial sector through the annual financial statements of sport-related businesses filed with Companies House.

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<sup>8</sup> SpEA, SIRC, Statistical Service of Republic of Cyprus, Meerwaarde Sport en Economie, FESI, Ministry of Sport and Tourism of the Republic of Poland (2012). Study on the Contribution of Sport to Economic Growth and Employment in the EU. Research Report. *European Commission, Directorate-General Education and Culture*. (<http://ec.europa.eu/sport/library/studies/study-contribution-sports-economic-growth-final-rpt.pdf>)

2. Analysis the finances of sports clubs through annual financial statements and other data in the public domain.
3. The trade of goods as reported by Her Majesty's Revenue and Customs (HMRC).
4. Annual financial statements for governing bodies, associations and charities.
5. Participation data for Olympic and Paralympic sports through APS, TPS and TPCS.
6. The Input-Output Tables for the national economy, together with data concerning average earnings provided by the Annual Survey of Hours and Earnings which is used to estimate the number of employees in each SIC activity.
7. ONS data for number of self-employed people in SIC code groups.

This method represents the first attempt to disaggregate an existing estimate for GVA and employment for sport as a whole to its constituent sports. The method is transparent making it possible to revise and update the estimates in the future.

## 2.2. Approximation of GVA for the economy as a whole

GVA must be approximated for economic activities in the Vilnius Definition of sport at the four-digit SIC code level. The National Accounts are presented at a two-digit level, making such an approximation a necessary first step in the calculations. To illustrate this point, Table 4 below shows, as an example, an extract of the economic activities analysed in this research, which contribute, in part, to the output generated by sport:

For each of the economic categories used, (such as 94.12 or 94.11 in Table 4) we computed a GVA estimation (reflecting the economy as a whole, not just sport). As an example, in the economic category 96.09, the four digit GVA detail can be approximated through the use of the Annual Business Survey (which has such detail available).

By using:

- ABS (96.09): GVA £5,615 million;
- ABS (96): GVA £10,437 million, and
- IOT (96): GVA £16,736 million

an estimate of overall GVA for the sector 96.09 can be derived as:

$[ABS(96.09) / ABS(96)] * IOT(96)$ .

In the example above, the estimated GVA for the sector 96.09 equals £9,003.8 million:  $(5615/10437)*16736$ . In other words, the share suggested by ABS (of 96.09 as a subset of 96) is applied to the Input Output Tables (IOT), making the final estimate consistent with national statistics.

A total of 182 economic activities were analysed in this way. After deriving the overall GVA for each of the code specific economic activities, we proceeded to estimate the share of GVA attributable to each Olympic and Paralympic sport.

**Table 4: Sample economic activities used in the analysis**

<b>SIC codes</b>	<b>Economic activity</b>	<b>Sport content (examples)</b>	<b>Definition and sport percentages</b>
93.11	Operation of sports facilities	Sports facility operation services; Operation of swimming pools and stadiums; Operation of other sports arenas and stadiums	Statistical, 100%
93.12	Activities of sport clubs	Services of sport clubs;	Statistical, 100%
93.13	Fitness facilities	Services of fitness facilities	Statistical, 100%
93.19	Other sports activities	Services of athletes; Support services related to sports and recreation; Other sports and recreational sports services; Sports and recreational sports event promotion services	Statistical, 100%
93.29	Other amusement and recreation activities	Services of marinas, ski services, table football games, coin-operated machines for car racing games	Narrow, 30%
94.11	Activities of business and employers memberships organisations	Operation of sports facilities	Narrow, 1%
94.12	Activities of professional membership organisations	Teaching swimming life-saving and survival techniques.	Broad, 3%
95.23	Repair of footwear and leather goods	Sport repairs	Narrow, 10%
95.29	Repair of other personal and household goods	Refurbishment and selling of donated bicycles.	Narrow, 30%
96.04	Physical well-being activities	Fitness clubs	Narrow, 10%
96.09	Other personal service activities	Operation of professional football clubs together with related and ancillary activities.	Narrow, 10%

### 2.3. Estimation of sport related GVA.

For the current research the DCMS's SSA is taken as the basis upon which any sport-specific SSA can be built. The task here is to analyse the sport sector in such a way as the total sport related GVA (£34.3bn) can be reproduced within an acceptable tolerance level (+/-5%) and broken down into the constituent parts of the Vilnius Definition of sport. Although some elements of the Vilnius Definition of sport are 100% sport (the statistical definition), the 'narrow' and the 'broad' definitions (as explained in the introduction) include activities in which only a proportion of the total is eligible sport-related economic activity. For this part of the project, the data inputs are provided primarily by:

- the annual reports of limited companies filed with Companies House (CH) and processed through the 'Financial Analysis Made Easy' (FAME) database;
- the Annual Business Survey;
- the Input Output Tables provided by the Office for National Statistics (ONS); and
- The overall GVA estimates of the previous step.

Through the analysis of annual reports by Standard Industrial Classification (SIC) code a sport percentage can be assigned to the sport-related component in each relevant economic activity. This is a critical element in the calculation of sport GVA and its subsequent allocation across the portfolio of Olympic and Paralympic sports. This highly detailed distribution of GVA should be regarded as a pragmatic device by which to generate aggregate values for each sport, rather than as a publishable statistical output with the status of an Official Statistic. The four digit SIC codes that were found to be relevant to the generation of GVA and employment, for Olympic and Paralympic sports, are listed in Table A.1 of the Appendix.

The important point of note here is that these derived shares provide an overall estimation of sport-related GVA that is consistent with the DCMS data. This finding should provide strong reassurance about the validity of the method we have used.

In the case of category 96.09, by multiplying the sport share (in this case around 9%) by the estimated GVA for the code as a whole, we computed the sport generated GVA that is associated with this particular economic activity.

After calculating the sport GVA for each of the relevant activities, we identified a total sport GVA of £33.8bn. This is very close (98.5%) to the output figure of £34.3bn for 2014 published by DCMS. By making a small proportional adjustment of 1.5%, all the code-specific sport GVAs have been adjusted to match the DCMS total. This approach ensures that the method used is valid and consistent with values stated in both the National Accounts and the Sport Satellite Account. A further benefit is that that the model can be adjusted easily in the event of any future update.

### 2.4. Estimation of sport related employment consumer spending and turnover

As in the case of GVA, the overall sport employment for the UK has been estimated to within +/-5% of the official statistics. After several trials, the method of achieving this level of alignment included the following steps:

- Using Input Output Tables (IOTs) and sport GVA totals, we estimated wage bills for sport employees per SIC code;

- using mean wages from the Annual Survey for Hours and Earning (ASHE), and wage bills we estimated the number of employees (head count);
- alternatively, by using full time wages we calculated full time equivalents (FTE); and
- by using data from ONS, the number of employees found was adjusted upwards to include those classified as self-employed.

This procedure provides an employment figure for each sport-related SIC code reviewed, which is then distributed around the grid.

Using GVA figures and IOT ratios for each SIC code (for example turnover / GVA for specific economic activities as identified in the National Accounts), we can import sport-related consumer spending and turnover into the model. In each case we derive overall consumer spending and turnover figures for relevant SIC codes, which are then allocated across sports. It is worth noting that consumer spending in this case includes household spending only and excludes final spending from non-profit institutions, which may have the effect of understating the total amount marginally.

## 2.5. Distribution of sport estimates across sports

The GVA for all sport is allocated to the relevant Olympic and Paralympic sports based on:

- the participation distribution between sports (Active People Survey and Taking Part Survey);
- the economic activities that are relevant in each sport, creating a sport grid;
- assumptions about sports and activities that have been excluded, and
- the commercial presence of some sports as a basis for cross-referencing and providing a 'sense check'.

(i) The participation rates have been analysed in section 1.4 above, and include both adults and children.

(ii) The allocation of the overall sport-related GVA to specific sports is a major innovation of this project. Our aim was to link each Olympic and Paralympic sport with the relevant economic activity found in each of the 182 SIC codes that we analysed. Some codes, such as 96.09 are associated with the vast majority of sports. Others, such as 01.19, are limited to specific sports (in this case equestrian). Hence, from the outset we needed to map SIC codes that are associated with Olympic and Paralympic sports. This process was conducted by using annual reports, trade profiles and descriptions, financial statements, and associated four-digit SIC codes filed with Companies House (see Appendix).

The first major observation from this mapping exercise is that Olympic and Paralympic sports span a surprisingly large number of industrial sectors and SIC codes. The breadth of sport's economic reach implies a strong link between sport and the rest of the economy, which in turn means that we should expect to see relatively high multiplier values across the entire sport production process.

The association between individual sports and SIC codes was decided on the basis of three methods:

- firstly, by analysing the descriptive narrative and examples used in each category;
- secondly, by assuming that some SIC codes, such as all in the statistical definition; medicines (narrow definition); and newspapers (broad definition), are associated with all sports; and

- thirdly, by researching the Companies House data set for Principal SIC codes under the name and trade description of each sport.

The associations established between sports and SIC codes led to the development of a grid, an extract of which is illustrated in Figure 1.

It should be noted that all of the Olympic and Paralympic sports that are listed in Table 2 (participation rates) are included in the master version of the sport by economic activity grid. Figure 1 is merely for illustrative purposes.

For example, in the case of SIC 13.94 (Manufacture of cordage, rope, twine and netting) the sport-related GVA is estimated to be £3.7m. The only sports in the grid associated with this activity are climbing and sailing, although other sports may use ropes as an indirect input rather than as a necessary requirement. Consequently, the total of sport-related GVA in SIC code 13.94 is distributed solely to climbing and sailing.

(iii) The detailed restrictions for the allocation of GVA to sports (which is also applicable to the estimates for employment and consumption) are outlined below:

- exclusion of football, golf, rugby, cricket, motorsport and tennis;
- exclusion of the majority of sport-related betting as most of it is in horse racing and football with no relationship to Olympic and Paralympic sport; and
- triathlon was based on specific APS participation data, but its grid pattern was defined by combining data from running, swimming and cycling.

Health and fitness activity (which has a participation rate of 11.2% in APS) is allocated to the Olympic and Paralympic model at a rate that reflects the overlap of health and fitness with participants in Olympic and Paralympic sports. Using our own analysis of APS we found that of the 11.2% of participants who took part in health and fitness, 58% did not participate in Olympic or Paralympic sports. In other words, 42% of health and fitness participants also took part in one or more Olympic and Paralympic sports and this percentage of health and fitness economic activity was allocated to them. Finally, the equestrian sport categories were adjusted upwards on the basis of participation to reflect the combined equestrian participation rates suggested by APS, as APS includes overall equestrian participation rates that are greater than the sum of the participation rates for the three Olympic disciplines.

Figure 1: Olympic-Paralympic Sport vs economic activity (SIC) grid- an extract

SIC	Archery	Athletics	Badminton	Basketball	Boxing	Canoeing	Cycling BMX	Cycling Mountain Bike	Cycling Road	Cycling Track	Swimming/diving	Equestrian Dressage	Equestrian Jumping	Fencing	Gymnastic	Handball	Hockey	Judo	Rowing	Sailing
41	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
42.91																				
42.99																				
43.29																				
43.99	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
45.11																				
45.19																				
45.2																				
45.4																				
46.11																				
46.16	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
46.18	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
46.38	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
46.41																				
46.42	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
46.43																				
46.46	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
46.49	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
46.52																				
46.69	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
46.71																				
46.9	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
47.19	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
47.29																				
47.3																				
47.42	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
47.51	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
47.54																				
47.59																				
47.61																				
47.62	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
47.64	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
47.71																				
47.72																				
47.73																				
47.74	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

(iv) Commercial information available for individual sports was used as a source of sense checking and to fine-tune the model. This approach was particularly important for approximating the economic size of sports that were excluded from the study. The current research was informed by three recent sport-specific economic valuations of golf<sup>9</sup> and football<sup>11</sup>. The golf study for the UK revealed a golf-specific GVA of over £2 billion. The football study was mainly centred on the economics of the Premier League and in this sense was not representative of the entire football sector. A search of company accounts, for the benefit of this project, showed that football generated GVA in excess of £5bn. As football and golf are not part of this research, it follows that Olympic and Paralympic sport will be at least £7 billion less than the overall GVA for sport found in the DCMS Satellite Account for Sport in 2014 (£30.3 billion). In the case of gymnastics the participation rate amongst adults was at odds with the commercial profile of the sport found on the FAME database. This finding and further investigation led us to the conclusion that the sector was driven by children's participation, which was not captured in the adult survey. As a result we incorporated children participation into the research.

## 2.6. Calculation of indirect effects in GVA, employment and turnover.

The main part of the Satellite Account is concerned with the direct demand for Olympic and Paralympic sport in terms of GVA, employment, consumer spending and turnover. This represents the immediate net (or direct) change in economic activity in the sectors of the economy that service Olympic and Paralympic sport such as the manufacture of sports goods. However, the overall economic impact of sport includes an indirect component reflecting the way in which initial expenditure subsequently filters through an economy. Industries that create direct impacts depend on the supply of goods and services from other industries, which in turn have to change their outputs to meet demand. These inter-industry, or supply chain, transactions of intermediate goods and services represent the *indirect impact*, and originate mainly from the non-sport commercial sector, for example food and drink supplies for clubs or energy requirements of sport stadiums.

As a further development to the initial direct economic impact, the indirect effects on GVA, employment and turnover are also calculated. All multipliers used (associated with the Leontief Type I matrix, as reported by the Office for National Statistics) represent the linkages between different sectors of the economy, and are based on the latest analytical Product-by-Product Tables provided by ONS. When multiplying a change in final demand (direct impact) by a Type I output multiplier, the net effect is to create an estimate of the direct and indirect impacts upon output throughout the economy.

## 2.7. Concluding remarks.

Overall, the current methods provide an estimation of the economic impact of Olympic and Paralympic sport in terms of GVA, employment, consumer spending and turnover using an approach consistent

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<sup>9</sup> SIRC: A Satellite Account for Golf in the UK, 2016, a research supported by the R&A

(<http://www.sportsthinktank.com/uploads/economic-impact-of-golf.pdf>)

<sup>10</sup> SIRC (2017) A Satellite Account for Golf in the Republic of Ireland, R&A and the Confederation of Golf in Ireland, Dublin. <https://www.golfnet.ie/News%20Listing%20Assets/CGI%20Report%20Economic%20Impact.pdf>

<sup>11</sup> The Premier League, Economic Impact Analysis; Ernst & Young LLP (2015);

[http://www.ey.com/Publication/vwLUAssets/EY - The economic impact of the Premier League/\\$FILE/EY-The-economic-impact-of-the-Premier-League.pdf](http://www.ey.com/Publication/vwLUAssets/EY_-_The_economic_impact_of_the_Premier_League/$FILE/EY-The-economic-impact-of-the-Premier-League.pdf)

with the compilation of the UK's National Accounts and DCMS's SSA. By examining each SIC code separately (and including estimates of the major sports that have been excluded, such as golf) it is possible to distribute GVA using participation in each sport. This is a pragmatic approach and acts as a reasonable starting point, given that sports such as golf and football which have relatively high average levels of consumer spending are excluded. Additionally, the approach is transparent and can be updated in the light of new data yet still retain its structural integrity. As a *caveat*, although we have employed the Satellite Account methodology used for the sport industry as a whole, which is recognised as an Official Statistic, the contents of this report are not UK Official Statistics.

### 3. ESTIMATION OF SPORT SPECIFIC GVA

Table 5 below presents the results of the GVA generated by all current and known future Olympic and Paralympic sports. The results are presented on the basis of the 'statistical', 'narrow' and 'broad' definitions of sport, consistent with the overarching Vilnius Definition. A more detailed table, including GVA (broad definition) estimates for each sport is attached in Table A.2 in the Appendix. In 2014, Olympic and Paralympic sport generated £18.9bn of GVA, which equates to 55% of the total sport-related GVA for that year. This is divided into summer Olympic sport (£16.1bn), winter Olympic sport (£0.7bn) and all Paralympic sport (£2.1bn). The sector is driven by a minority of sports, notably athletics, swimming and road cycling with GVAs of £2.1bn, £3.2bn and £2.3bn respectively. These three sectors have a very strong profile both in terms of participation and commercial presence in the Companies House database.

Table 5, GVA £m, 2014

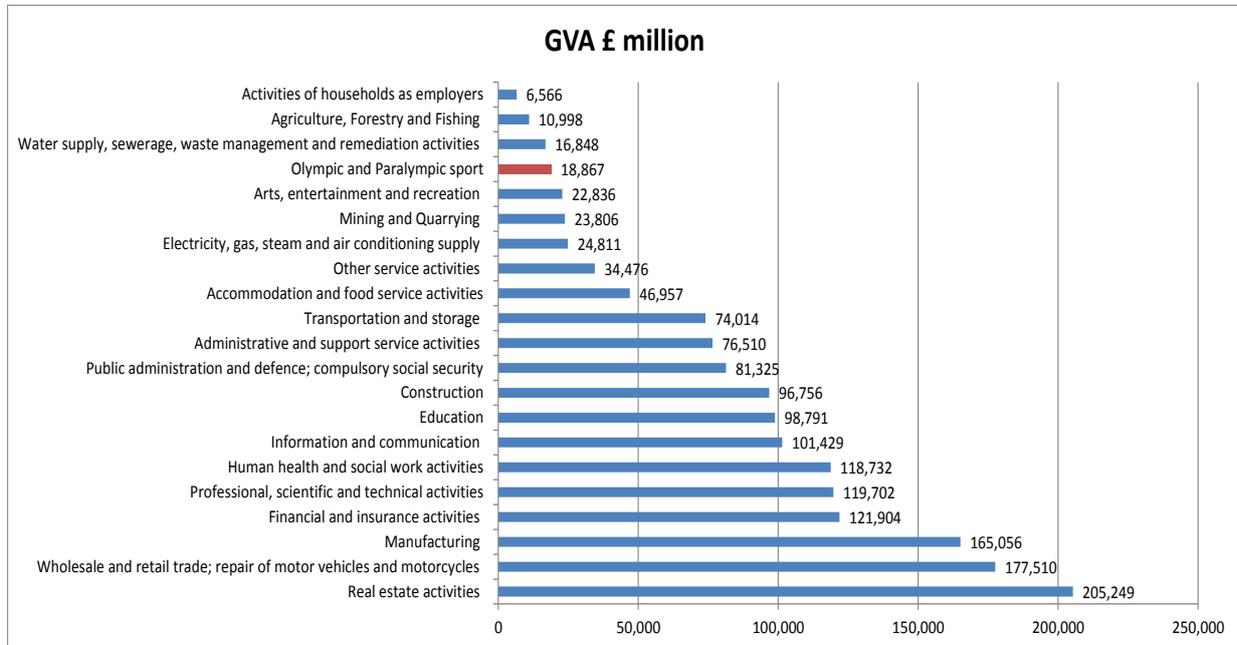
GVA £m	Statistical Definition		Narrow Definition		Broad Definition		UK Sport funding
Olympic sport	£2,026	12.6%	£9,265	57.5%	£16,104	100%	£258.5
Winter sport	£115	16.9%	£374	55.1%	£678	100%	£22.9
Paralympic sport	£217	10.4%	£1,110	53.2%	£2,085	100%	£73.6
Total	£2,358	12.5%	£10,749	57.0%	<u>£18,867</u>	100%	£355.0
Total as % of all sport						55%	

The majority of GVA is generated in sports associated with the summer Olympics, since these represent the majority of sport participants. A further trend is that more GVA is generated when there is significant investment in sport equipment. For example in swimming, where the investment in sport equipment is relatively low, the commercial profile of the sport is smaller than that suggested by its participation rate. By contrast, both cycling and shooting have strong commercial profiles on the grounds of the relatively extensive spending required on equipment and consumables.

As shown in Table 5, the statistical definition, or the direct cost of taking part, is highest for winter sport (16.9%) than the other two categories. The narrow definition, which subsumes the statistical definition, is 57% of the broad definition estimate for total Olympic and Paralympic GVA. The final column in Table 5 presents the UK Sport funding allocated to each category of sports for the Tokyo and PyeongChang cycles. These funding allocations are targeted according to criteria concerned with achieving greater medal success, and do not necessarily reflect the economic scale of sports as

determined mainly by participation rates. If we annualise UK Sport's investment in Olympic and Paralympic sport (c. £89m per annum), it is clear that support for elite sport development systems is a tiny fraction of the overall sport industry. In its entirety, the industry associated with Olympic and Paralympic sport is measurable and significant in the context of the UK economy as a whole, as shown in Figure 2.

Figure 2: Olympic and Paralympic sport relative to the UK economy



With a total GVA of £18,677 million, Olympic and Paralympic sport is an industry which is larger than three entire sectors of the UK economy, namely: activities of households as employers; agriculture, forestry and fishing; and water supply, sewerage, waste management and remediation services.

#### 4. SPORT EMPLOYMENT, CONSUMER SPENDING AND TURNOVER

In 2014, the economic activity related to Olympic and Paralympic sport was responsible for 623,000 jobs, representing 58% of sport-related employment measured by employees (or head count). Olympic and Paralympic sport also generated £36.6bn and £19.8bn in turnover (as explained in paragraph 1.2 of the Introduction) and consumer spending correspondingly. In all cases turnover is greater than GVA as it includes all other inputs required for production such as raw materials in addition to wages and profits which are the sole focus of GVA. The consumer spending figure is equivalent to £306 per head of the entire population (c. 64.6m) over the year. Comparisons with sport as a whole from the DCMS 2014 Sport Satellite Account are possible for GVA and employment only as consumer spending and turnover are not presented in that report.

As was the case with GVA, employment is driven by athletics, swimming and road cycling, with 69,000, 109,000 and 75,000 jobs (head count) respectively.

Table 6, Employment (head count), Consumer Spending and Turnover (£m), 2014

Employment (head count)	Statistical Definition		Narrow Definition		Broad Definition	
	Olympic sport	68,600	12.9%	326,000	61.2%	532,500
Winter sport	3,900	18.8%	12,700	61.2%	20,700	100%
Paralympic sport	7,300	10.5%	38,800	55.5%	70,000	100%
<b>Total</b>	<b>79,800</b>	<b>12.8%</b>	<b>377,500</b>	<b>60.6%</b>	<b>623,200</b>	<b>100%</b>
% of all sport						58%
Consumer spending £m	Statistical Definition		Narrow Definition		Broad Definition	
	Olympic sport	£4,357	26.3%	£11,054	66.8%	£16,540
Winter sport	£247	22.8%	£783	72.2%	£1,085	100%
Paralympic sport	£468	21.9%	£1,379	64.4%	£2,141	100%
<b>Total</b>	<b>£5,072</b>	<b>25.7%</b>	<b>£13,216</b>	<b>66.9%</b>	<b>£19,766</b>	<b>100%</b>
Turnover £m	Statistical Definition		Narrow Definition		Broad Definition	
	Olympic sport	£5,686	18.2%	£18,698	59.8%	£31,277
Winter sport	£323	24.0%	£777	57.7%	£1,347	100%
Paralympic sport	£611	15.2%	£2,229	55.5%	£4,015	100%
<b>Total</b>	<b>£6,620</b>	<b>18.1%</b>	<b>£21,704</b>	<b>59.2%</b>	<b>£36,639</b>	<b>100%</b>

In general, both employment and turnover follow a similar pattern to the distribution of GVA. They are derived specifically for each sport on the basis of the GVA distribution in the grid and the ratio between turnover and GVA, for each economic category, suggested by the National Accounts (Input Output Tables). Table 6 presents the estimates for employment, consumer spending and turnover across summer Olympic, winter Olympic and Paralympic sports. All three components of the Vilnius Definition, 'statistical', 'narrow' and 'broad' are used. For employment, the statistical and narrow definitions account for 12.8% and 60.6% of the broad definition respectively.

As Table 6 shows, the statistical definition is considerably higher for consumer spending (25.7%) compared with employment (12.8%) and turnover (18.1%). There are two possible explanations for this finding. First, consumer spending reflects the economic importance of charges for taking part in sport incurred by individuals, for example club membership. Second, there are some economic activities such as wholesale or research and development which are not directly related to households and which dilute the relative weight of participation costs in employment and turnover.

Finally, by using average full-time wages in the calculation of employment (instead of overall average wages) we can derive employment as measured by Full Time Equivalent jobs (FTE) as shown in Table 7. For Olympic and Paralympic sports it is estimated that the headcount of 623,200 jobs is equivalent to 479,600 FTEs. As is the case with the other indicators, the vast majority of employment is concentrated in the summer Olympic sports (409,600 FTEs, 85%). The distribution of FTE employment is 10.1% in the statistical definition and 58% in the narrow definition.

**Table 7, Employment, full time equivalent (FTE), 2014**

Employment FTE	Statistical Definition		Narrow Definition		Broad Definition	
Olympic sport	41,500	10.1%	240,100	58.6%	409,600	100%
Winter sport	2,400	15.2%	9,000	58.4%	15,500	100%
Paralympic sport	4,400	8.2%	28,900	53.0%	54,500	100%
<b>Total</b>	<b>48,300</b>	<b>10.1%</b>	<b>278,000</b>	<b>58.0%</b>	<b>479,600</b>	<b>100%</b>

## 5. CASE STUDIES

In this section two sports are examined in greater detail, namely road cycling and gymnastics. The former is one of the leading sports for generating GVA and the latter is a sport that led to revisions in the methods used due to a discrepancy between a low adult participation rate and a high commercial profile. A third case study introduces the five new Olympic sports for Tokyo 2020, namely: baseball / softball, climbing, karate, skateboarding and surfing.

### 5.1 Road cycling

At 3.35% the adult participation rate for road cycling (last four weeks) is one of the highest of all sports and equates to 1.76 million participants. The main estimates around road cycling are detailed in Table 8. GVA is particularly high for a specific sport at £2,310m, and is caused by expenditure on bicycles, accessories, clothing, footwear, and the costs of participation in clubs, events and the National Governing Body. This economic activity is the catalyst for some 74,900 jobs (head count) directly and indirectly dependent upon road cycling. As in most sports and the service sector more widely, a significant proportion of those jobs are in part time employment. In the case of road cycling, the head count of 74,900 converts into 58,300 FTE. Finally road cycling generates £2,167m in consumer spending which by the time it filters its way through the economy results in turnover of £4,384m.

**Table 8 economic impact of Road Cycling, 2014**

Measure	Value
GVA	£2,310m
Employment (head count)	74,900
Employment (FTE)	58,300
Consumer spending	£2,167m
Turnover	£4,384m

A detailed analysis of the cycling sector found noteworthy companies that are directly or indirectly associated with the sport. Road cycling has an important presence in well-known companies such as Halfords, Outdoor and Cycle Concepts, F.W. Evans Cycles, Chain Reaction Cycles, and Wiggle Limited (to name but a few). The British Cycling Federation on its own (through 260 employees) generated GVA of £11.8m, 62% of which is associated with road cycling (according to the participation rates). The economic presence of road cycling has also been found in some high street chains such as Argos and Sports Direct. To appreciate the strength of some operators involved, Table 9 presents a selection of GVA, employment and income statistics as they appear in the Annual Accounts.

**Table 9 Road cycling companies and organisations, 2014**

Company	GVA, £m	Employment	Income, £m
Outdoor and Cycle concepts	70.9	1,317	115.7
F.W. Evans Cycles	70.5	1,179	127.7
Chain Reaction Cycles	65.8	540	153.4
Wiggle	55.2	456	179.2
Cycle Surgery	12.3	214	24.1
The British Cycling Federation (all cycling)	11.8	261	26.1

By searching through the top 500,000 companies registered with Companies House, the GVA associated with cycling was found to be well in excess of £1bn. This finding provides confidence that the final estimate of £2,310m is reasonable as there are many smaller companies engaged with cycling throughout the economy. Table 10 illustrates the distribution of GVA for road cycling according to specific SIC codes. Sport activities, retail sales and manufacturing dominate the generated GVA in the sport.

The popularity of cycling has increased as demonstrated by 327,100 more adults cycling in Active People Survey 8 compared with Active People Survey 1. It is not possible to attribute specific factors that have caused such growth, but there are various developments that have occurred which collectively might help to explain such growth. These include but are not limited to:

- the recent success of British riders in the Olympic Games and Tour de France;
- hosting the Tour de France in 2007 and 2014;
- a shift away from traditional team sports to solo sports;
- tax incentives such as the Cycle to Work scheme;
- improved cycling infrastructure, notably in London, and
- disincentives for car use such as the congestion charge.

In line with the increase in demand for cycling there has been an increase in cycling investment for the first time in the last 15 years. After Raleigh shut its Nottingham factory in 2003 and moved its production line to Taiwan, manufacturing was restricted to three mass-market manufacturers providing notable products such as folding bicycles and London's rental bicycles. However, the popularity of cycling has attracted the world's largest manufacturer by volume (Hero Cycles) to set up a design centre in Manchester, in the home of British Cycling. Hero Cycles manufactures 5% of the world's bicycles (by volume) and it hopes that the bicycles it designs will be associated with Olympic success, which in turn will strengthen its brand. On the basis of this potential, Manchester was preferred ahead of currently more cycle-friendly cities such as Amsterdam and Berlin.

Table 10 SIC codes and GVA, 2014

SIC	General description	Road Cycling GVA, £m	%
47.59	Retail sale household articles in specialised stores	212.6	9.2%
93	Sport activities	209.8	9.1%
69.1	Legal activities	175.9	7.6%
59.13	Motion picture, video and television programme distribution activities	128.2	5.5%
47.64	Retail sale of sporting equipment in specialised stores	124	5.4%
55.1	Hotels and similar accommodation	115.6	5.0%
46	Wholesale trade services, except of motor vehicles and motorcycles	85.0	3.7%
85.31	General secondary education	81.4	3.5%
84	Public administration and defence; compulsory social security	78.9	3.4%
30.92	Manufacture of bicycles and invalid carriages	67.8	2.9%
60.2	Television programming and broadcasting activities	65.4	2.8%
92	Gambling and betting activities	58.7	2.5%
45	Wholesale and retail trade and repair services of motor vehicles	56.5	2.4%
85.51	Sport and recreation education	48.9	2.1%
68.2	Renting and operating of own or leased real estate	45.9	2.0%
96.09	Other personal service activities n.e.c.	44.7	1.9%
32	Other manufactured goods	39.2	1.7%
42.99	Other construction installation	39.1	1.7%
47.71	Retail sale of clothing in specialised stores	37.2	1.6%
94	Services furnished by membership organisations	34.3	1.5%
47.78	Other retail sale of new goods in specialised stores	33.6	1.5%
74	Other professional, scientific and technical services	32.0	1.4%
86	Hospital activities	28.8	1.2%
59.12	Motion picture, video and television programme post-production	27.9	1.2%
55.2	Holiday and other short-stay accommodation	27.7	1.2%
58	Publishing services	26.2	1.1%
18	Printing and recording services	25.5	1.1%
21.2	Manufacture of pharmaceutical preparations	24.9	1.1%
79	Travel agency, tour operator and other reservation services	23.0	1.0%
	Other	311.3	13.5%
	<b>Total</b>	<b>2,310</b>	<b>100%</b>

Looking ahead, the cycling industry faces two interesting technological challenges. First, the improvement in the quality of bicycles is likely to lengthen the time between replacing cycles, which

may result in fewer sales. On the other hand innovations such as battery powered e-bikes are gaining in popularity, introducing a new group of participants to the cycling market.

## 5.2 Gymnastics

All sports included in this research take into account the sport participation rates of both adults and children where data permit. Nowhere is the effect of children's participation more economically significant than in gymnastics. When the first wave of results was cross referenced with the sport's commercial presence the adult participation rate in gymnastics (0.26%) was at odds with its very high commercial profile. The economic driver of gymnastics is children's participation which has a very high participation rate of 10.3%, equivalent to almost 800,000 participants under the age of 16.

The main estimates around Gymnastics are shown in Table 11.

*Table 11 Economic impact of Gymnastics, 2014*

Measure	Value
GVA	£520m
Employment (head count)	15,700
Employment (FTE)	11,600
Consumer spending	£535m
Turnover	£1,038m

As in the case of road cycling, turnover at £1,038m was almost double the size of GVA and consumer spending. Employment in 2014 was a head count of 15,700 which equates to 11,600 FTEs and reflects the large number of people working in the sport on part time basis, such as coaches.

A detailed analysis of the sector found many organisations that are directly or indirectly associated with the sport of gymnastics. Most of them are clubs, academies and associations which receive income from households (e.g. membership fees) or other organisations such as local government (e.g. grants). Notable examples include the national governing body for the sport, the British Amateur Gymnastic Association, and several schools of gymnastics and dance such as Heathrow School, City of Newcastle Gymnastics Academy, and Chelmsford Gymnastics Club.

*Table 12 Some Gymnastics and organisations, 2014*

Organisation	GVA, £m	Employment	Income, £m
British Amateur Gymnastics Association	7.2	154	15.0
South Essex Gymnastics Club	0.6	64	1.1
Basingstoke Gymnastic Club	0.5	90	0.9

Table 12 shows some of these organisations' economic scale in terms of GVA, employment and income. The sector is based on a large number of small clubs (1,400 in the UK, with 300,000 members) which receive regular funding from households and institutions. According to the British Amateur Gymnastics Association, in 2014 there was a 12% growth in membership. The size of the clubs and the

high labour requirements result in gymnastics being noteworthy for the volume of employment associated with the sport.

The GVA in gymnastics is associated with a wide range of business activities as indicated in the breakdown shown in Table 13 below:

*Table 13 SIC codes and GVA, 2014*

SIC	General description	Gymnastics GVA, £m	%
93	Sport activities	115.8	22.3%
47.64	Retail sale of sporting equipment in specialised stores	68.5	13.2%
84	Public administration	43.6	8.4%
60.2	Television programming and broadcasting activities	36.1	6.9%
85	Sport education	27.8	5.3%
96	Personal service activities	25.7	4.9%
47.71	Retail sale of clothing in specialised stores	20.5	3.9%
94	Activities of membership organisations	18.9	3.6%
46	Wholesale of clothing and footwear	22.8	4.4%
86	Hospital activities	15.9	3.1%
18.12	Other printing	14	2.7%
21.2	Manufacture of pharmaceutical preparations	13.7	2.6%
90.01	Performing arts	9.4	1.8%
63.91	News agency activities	8.6	1.7%
32.3	Manufacture of sport goods	7.8	1.5%
32.5	Manufacture of medical and dental instruments and supplies	7.3	1.4%
49	Land transportation	7.2	1.4%
58.13	Publishing of newspapers	7.1	1.4%
82.99	Other business support service activities	5.5	1.1%
	Other	43.8	8.4%
	<b>Total:</b>	<b>520</b>	<b>100%</b>

In 2014, gymnastics experienced a record growth in membership which will grow the sport further in terms of economic impact and participation. Among the 300,000 strong membership, 70% are under 12 years old. Given the importance of young people's participation in gymnastics, it is appropriate that education remains a high policy priority. According to British Gymnastics (BG), over 467 courses were held in 2014/15, with over 4219 coaches accredited<sup>12</sup>. The key performance indicators, as identified by BG, include the membership rise of 12% and the funding from government grants of 36% of income. The recent success of Team GB in gymnastics, improving from one medal in Beijing 2008 to seven medals in Rio 2016, will be worth tracking in further detail to establish if Olympic success is associated with increased participation and economic scale.

<sup>12</sup> <https://www.british-gymnastics.org/documents/footer-menu-items/agm-2015/6943-directors-report-financial-statements-year-ended-31-3-15/file>

### 5.3 New Olympic sports for Tokyo 2020

The five new sports that have been included on the Tokyo 2020 Olympic programme are all relatively minor sports and it is worth an initial examination of their economic characteristics as a group. They include baseball/softball, karate, skateboarding, climbing and surfing. Table 14 is a snapshot of the participation rates and numbers taken from Table 3.

*Table 14: New Olympic sports- participation rates, 2014*

Sport	Participation Rate (%)	Participants
Baseball and softball, Adults	0.05%	26,222
Baseball and softball, Children	0.90%	73,143
Climbing, Adults	0.72%	377,593
Karate, Adults	0.21%	110,131
Skateboarding, Adults	0.10%	52,444
Surfing, Adults	0.20%	104,887

In the case of baseball / softball, the scale of children's participation boosts overall participation rates and numbers. Amongst children the participation rate is 0.9% (73,000 participants) compared with 0.05% (26,000 participants) in the case of adults. For the remaining sports climbing has a relatively high participation rate among adults at 0.72% (378,000 participants).

*Table 15 The economic characteristics of the five new sports for Tokyo 2020*

Measure	Baseball / softball	Karate	Skateboarding	Climbing	Surfing
GVA	£56m	£85m	£20m	£250m	£53m
Employment (head count)	1,800	2,600	600	8,600	1,900
Employment (FTE)	1,400	2,000	400	6,500	1,400
Consumer spending	£59m	£87m	£24m	£355	£57
Turnover	£106m	£165m	£41m	£486m	£106m

Table 15 presents the most important indicators in terms of GVA, employment, consumer spending and turnover for the five new Olympic sports. Based on its relatively high participation rate among adults and its specialist equipment needs, climbing is responsible for the highest GVA (£250m) and employment (8,600 head count, 6,500 FTE) of the five new Olympic sports. Climbing was followed by karate which supports 2,000 FTE jobs. In 2014, households spent £87m on karate, of which the majority is channelled through almost 800 clubs which form the backbone of the sport. These sports represent an interesting portfolio to monitor in the lead in to and aftermath of Tokyo 2020 to establish whether or not Olympic status has a material impact on their economic scale.

## **6. INDIRECT EFFECTS IN GVA, EMPLOYMENT AND TURNOVER.**

By using the indirect multipliers derived for GVA, employment and turnover, the indirect effect of sport can be estimated. Industries that create direct impacts depend on the supply of goods and services by other industries, which in turn have to change their outputs to meet demand. These inter-industry transactions of intermediate goods and services represent the indirect impact, and originate mainly from the non-sport commercial sector, for example food and drink supplies. This extra indirect demand can be translated into all GVA, employment and turnover indicators as Table 16 below illustrates. The overall estimated direct and indirect effect amounts to £29,979m in GVA, 1,018,000 in employment (headcount), and £73,408m in turnover. The percentage increases of the indirect effects over the direct effects are estimated at 58%, 63% and 200% in GVA, employment and turnover respectively. This is the 'ripple effect' of Olympic and Paralympic sport which can be said to be the catalyst for an even more extensive scale of economic activity.

Table 16, Total indirect effects in GVA, Employment and Turnover 2014

Olympic sport	Direct + Indirect GVA, £m	Direct +Indirect Employment (headcount, 000s)	Direct + indirect Turnover £m
Archery	169	6.0	415
Athletics	3,384	113.5	8,190
Badminton	1,269	42.4	3,092
Basketball	970	33.2	2,382
Boxing	635	22.1	1,562
Canoeing	444	14.1	1,079
Cycling BMX	175	5.8	435
Cycling Mountain Bike	1,892	62.8	4,693
Cycling Road	3,622	120.2	8,983
Cycling Track	185	6.1	458
Swimming/diving	5,085	173.8	12,528
Equestrian Dressage	740	32.1	1,793
Equestrian Jumping	623	27.1	1,510
Fencing	35	1.1	87
Gymnastic	855	27.6	2,038
Handball	8	0.3	20
Hockey	382	12.8	939
Judo	77	2.4	181
Rowing	315	10.1	755
Sailing	476	15.7	1,166
Shooting	964	31.2	2,389
Table Tennis	1,109	37.6	2,714
Taekwondo	96	3.2	232
Trampoline	156	5.4	377
Triathlon	142	4.8	353
Volleyball	202	6.8	493
Water Polo	20	0.7	49
Weightlifting	713	22.6	1,678
Wrestling Freestyle	56	1.7	131
Wrestling Greco-Roman	56	1.7	131
Baseball/Softball	88	3.0	216
Karate	136	4.5	326
Skateboarding	34	1.1	81
Climbing	394	13.8	966
Surfing	87	3.1	210

<b>Winter Games</b>			
Alpine Skiing	199	6.5	488
Free Style Skiing	45	1.5	111
Cross Country Skiing	9	0.3	22
Curling	11	0.3	24
Skating	719	23.2	1,723
Ice Hockey	26	0.9	64
Nordic Combined	45	1.5	111
Snowboard	54	1.8	133
<b>Paralympics</b>			
Alpine Skiing	11	0.4	28
Archery	3	0.1	8
Athletics	203	7.0	494
Badminton	100	3.4	245
Boccia	2	0.1	4
Canoe	52	1.7	126
Cycling	972	32.6	2,413
Equestrian	125	5.5	305
Football	621	21.6	1,538
Judo	22	0.7	52
Power lifting	6	0.2	15
Rowing	15	0.5	36
Sailing	124	4.1	304
Shooting	180	5.8	446
Sitting Volleyball	6	0.2	16
Swimming	600	20.5	1,478
Table Tennis	74	2.5	181
Taekwondo	20	0.7	49
Triathlon	8	0.3	21
Wheelchair Basketball	65	2.3	161
Wheelchair Curling	2	0.1	4
Wheelchair Fencing	7	0.2	17
Wheelchair Tennis	56	1.9	137
<b>Total Direct and Indirect effect</b>	<b>29,979</b>	<b>1,018</b>	<b>73,408</b>
<b>Direct effect</b>	<b>18,867</b>	<b>623</b>	<b>36,639</b>
<b>Indirect effect</b>	<b>11,112</b>	<b>395</b>	<b>36,769</b>

## 7. CONCLUSION

The publication of this Satellite Account for Olympic and Paralympic sport is consistent with the Government's sport strategy *Sporting Future*, which cites economic development as one of five high level outcomes required from sport. What is meant by economic development in this context is 'a more productive, sustainable and responsible sport sector'. The key performance indicator to be used to measure the economic importance of sport will be the Department for Culture, Media and Sport's Sport Satellite Account. Of note in *Sporting Future* (p.80) is Key Performance Indicator 16 "Employment in the sport sector" which will be derived from the Sport Satellite Account.

This report presents the findings from the application of the UK Sport Satellite Account methodology to estimate the economic value of the subset of Olympic and Paralympic sports for the year 2014 using four principal measures:

- Gross Value Added (GVA);
- Employment;
- Consumer spending, and.
- Turnover.

This research identifies for the first time the allocation of sport-related GVA across Olympic and Paralympic sports. The overall value of £18.9bn equates to 55% of the total GVA generated by sport in the UK. When the indirect effect is added to the direct effect, total GVA is estimated at £30.0bn. Olympic and Paralympic sport is an industry which is larger than three entire sectors of the UK economy, namely: activities of households as employers; agriculture, forestry and fishing; and water supply, sewage, waste management and remediation services. In terms of employment, Olympic and Paralympic sport is responsible for 623,000 jobs (head count), which is equivalent to 2.1% of employment in the economy as a whole and 56% of employment in the sport economy.

*Table 17: The sporting context*

Measure	Olympic and Paralympic sport (2014)	Sport (2014)	% of the sport economy	% of the UK economy
GVA	£18.87 billion	£34.30 billion	55.0%	1.2%
Employment	623,000	1,119,000	55.7%	2.1%
Consumer spending	£19.77billion	n/a	n/a	1.7% (households)
Turnover	£36.64 billion	n/a	n/a	1.2%

In Table 17, when we examine Olympic and Paralympic sport in the context of the overall UK economy, it is notable that the percentage of employment (2.1%) is higher than the percentage of GVA (1.2%). A finding of this type is an indication of an industry that is efficient in generating employment. In general, it has been shown<sup>13</sup> that sport is responsible for a relatively high number of jobs compared

<sup>13</sup> SpEA, SIRC, Statistical Service of Republic of Cyprus, Meerwaarde Sport en Economie, FESI, Ministry of Sport and Tourism of the Republic of Poland (2012). Study on the Contribution of Sport to Economic Growth and Employment in the EU. Research Report. *European Commission, Directorate-General Education and Culture*. (<http://ec.europa.eu/sport/library/studies/study-contribution-sports-economic-growth-final-rpt.pdf>)

with its GVA; however this is the first time that the point has been demonstrated within the context of Olympic and Paralympic sport.

Although consumer spending and turnover cannot be identified as percentages of the sport industry because they are not reported in the DCMS's overall Sport Satellite Account, our estimate for Olympic and Paralympic sport is that they are equivalent to 1.7% and 1.2% of UK consumer spending and turnover respectively. The direct impacts reported above increase considerably when the indirect impact of supply chains is included. When the appropriate multipliers are applied, GVA and employment increase by 58% and 63% respectively, while turnover doubles. As before, these ratios show that Olympic and Paralympic sport is job rich, and it would be reasonable to expect an increase in employment in response to an increase in participation.

This research has been conducted so that it is consistent with the current UK Sport Satellite Account enabling any adjustments or future updates to be implemented in line with the National Accounts. It has used both participation data and commercial presence to allocate GVA and employment to Olympic and Paralympic sport. The methods used are transparent and can be used in the future for revising previous results in the light of new information. However, this research is not without its limitations and we make two recommendations to improve future editions of the study. First, it would be possible to construct an employment grid independent of the GVA grid, with employment shares constructed from annual reports sourced from Companies House via the FAME database. Such an approach is likely to highlight further the job rich nature of Olympic and Paralympic sport. In other words, investing in Olympic and Paralympic sport generates more employment than is generally true for the economy as a whole.

Second, any further information about SSAs associated with Olympic or even non-Olympic sport can be included within the current methodological framework and in turn improve the accuracy of the results. Currently among the most economically significant sports, only golf has an SSA. Producing SSAs for football and motorsports would provide an even more realistic GVA value for Olympic and Paralympic sport, once the total sport SSA for the year in question is known.

This report has shown that Olympic and Paralympic sport is fundamental in creating GVA and employment within the sport industry, accounting for the majority of the output produced. Further, this report is the first example of the UK sport industry being analysed separately by the three component parts of the Vilnius Definition of sport. Generally the statistical definition for GVA, employment and turnover ranged between 12% and 18%. However, in the case of consumer spending the statistical definition was much higher at 25.7%, which reflects the economic importance of charges for taking part in sport. Future research should investigate the economic significance of sport volunteering, which is not included in the Vilnius Definition; as well as the growth in sport employment. The five outcome areas of *Sporting Future* also require research into the social value of elite sport and this is underway in complementary research.

The UK now has a transparent audit trail of evidence by which to value the economic importance of Olympic and Paralympic sport, which is consistent with the DCMS's Sport Satellite Account. This position represents a strong basis from which to monitor the development of Olympic and Paralympic sport in future years.

## APPENDIX

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Table A.1. -Mapping of the UK Olympic and Paralympic sport industry

SIC	General description
<b><u>Economic activities in the statistical definition</u></b>	
93.11	Operation of sports facilities
93.12	Activities of sport clubs
93.13	Fitness facilities
93.19	Other sports activities
<b><u>Additional economic activities in the narrow definition</u></b>	
1.19	Growing of other non-perennial crops
1.43	Raising of horses and other equines
1.62	Support activities for animal production
10.91	Manufacture of prepared feeds for farm animals
13.92	Manufacture of soft furnishings
13.94	Manufacture of cordage, rope, twine and netting
14.11	Manufacture of leather clothes
14.12	Manufacture of workwear
14.13	Manufacture of other outerwear
14.14	Manufacture of underwear
14.19	Manufacture of other wearing apparel and accessories n.e.c.
15.12	Manufacture of luggage, handbags and the like, saddlery and harness
15.2	Manufacture of footwear
22.11	Manufacture of rubber tyres and tubes; retreading and rebuilding of rubber tyres
25.40	Manufacture of weapons and ammunition
26.52	Manufacture of watches and clocks
28.99	Manufacture of other special-purpose machinery n.e.c.
29.1	Manufacture of motor vehicles
29.2	Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers
30.12	Building of pleasure and sporting boats
30.30	Manufacture of air and spacecraft and related machinery
30.91	Manufacture of motorcycles
30.92	Manufacture of bicycles and invalid carriages
30.99	Manufacture of other transport equipment n.e.c.
32.3	Manufacture of sports goods
32.4	Manufacture of games and toys
32.99	Other manufacturing n.e.c.
33.11	Repair of fabricated metal products
33.12	Repair of machinery

33.13	Repair of electronic and optical equipment
33.15	Repair and maintenance of ships and boats
33.16	Repair and maintenance of aircraft and spacecraft
33.17	Repair and maintenance of other transport equipment n.e.c.
33.19	Repair of other equipment
33.20	Installation of industrial machinery and equipment
41.00	Civil engineering
42.91	Construction of water projects
42.99	Other construction installation
43.29	Construction of other civil engineering projects n.e.c.
43.99	Other specialised construction activities n.e.c.
45.11	Sale of cars and light motor vehicles
45.19	Sale of other motor vehicles
45.20	Maintenance and repair of motor vehicles
45.40	Sale, maintenance and repair of motorcycles and related parts and accessories
46.11	Agents selling agricultural raw materials, livestock, textile raw materials and semi-finished goods
46.16	Agents involved in the sale of textiles, clothing, fur, footwear and leather goods
46.18	Agents specialised in the sale of other particular products
46.41	Wholesale of textiles
46.42	Wholesale of clothing and footwear
46.46	Wholesale of pharmaceutical goods
46.69	Wholesale of other machinery and equipment
46.71	Wholesale of solid, liquid and gaseous fuels and related products
47.30	Retail sale of automotive fuel in specialised stores
47.42	Retail sale of telecommunications equipment in specialised stores
47.51	Retail sale of textiles in specialised stores
47.54	Retail sale of electrical household appliances in specialised stores
47.59	Retail sale of furniture, lighting equipment and other household articles in specialised stores
47.64	Retail sale of sporting equipment in specialised stores
47.71	Retail sale of clothing in specialised stores
47.72	Retail sale of footwear and leather goods in specialised stores
47.78	Other retail sale of new goods in specialised stores
47.91	Retail sale via mail order houses or via Internet
47.99	Other retail sale not in stores, stalls or markets
75	Veterinary activities
77.21	Renting and leasing of recreational and sports goods
77.32	Renting and leasing of construction and civil engineering machinery and equipment
81.3	Landscape service activities
85.1	pre-primary education

- 85.2 Primary education
- 85.31 General secondary education
- 85.32 Technical and vocational secondary education
- 85.41 Post-secondary non-tertiary education
- 85.42 Tertiary education
- 85.51 Sport and recreation education
- 85.52 Cultural education
- 85.59 Other education n.e.c.
- 85.6 Educational support services
- 932.1 Activities of amusement parks and theme parks
- 93.29 Other amusement and recreation activities n.e.c.
- 94.11 Activities of business and employers memberships organisations
- 94.12 Activities of professional membership organisations
- 94.99 Activities of other membership organisations
- 95.23 Repair of footwear and leather goods
- 95.29 Repair of other personal and household goods
- 96.04 Physical well-being activities

**Additional economic activities in the broad definition**

- 10.86 Manufacture of homogenised food preparations and dietetic food
- 11.07 Manufacture of soft drinks; production of mineral waters and other bottled waters
- 18.11 Printing of newspapers
- 18.12 Other printing
- 18.13 Pre-press and pre-media services
- 18.14 Binding and related services
- 19.20 Manufacture of refined petroleum products
- 21.20 Manufacture of pharmaceutical preparations
- 22.29 Manufacture of other plastic products
- 32.50 Manufacture of medical and dental instruments and supplies
- 46.38 Wholesale of other food, including fish, crustaceans and molluscs
- 46.43 Wholesale of electrical household appliances
- 46.49 Wholesale of other household goods
- 46.52 Wholesale of electronic and telecommunications equipment and parts
- 46.90 Non specialised wholesale trade
- 47.19 Other retail sale in non-specialised stores
- 47.29 Other retail sale of food in specialised stores
- 47.61 Retail sale of books in specialised stores
- 47.62 Retail sale of newspapers and stationery in specialised stores
- 47.73 Dispensing chemist in specialised stores

- 47.74 Retail sale of medical and orthopaedic goods in specialised stores
- 47.794 Retail sale of second-hand goods in stores
- 49.10 Passenger rail transport, interurban
- 49.31 Urban and suburban passenger land transport
- 49.32 Taxi operation
- 49.39 Other passenger land transport
- 50.1 Sea and coastal passenger water transport.
- 50.3 Inland passenger water transport
- 51.1 Passenger air transport
- 52.21 Service activities incidental to land transportation
- 55.1 Hotels and similar accommodation
- 55.2 Holiday and other short-stay accommodation
- 55.3 Recreational vehicle parks, trailer parks and camping grounds
- 55.9 Other accommodation
- 56.1 Restaurants and mobile food service activities
- 56.2 Event catering and other food service activities
- 56.3 Beverage serving activities
- 58.11 Book publishing
- 58.13 Publishing of newspapers
- 58.14 Publishing of journals and periodicals
- 58.19 Other publishing activities
- 58.29 Other software publishing
- 59.11 Motion picture, video and television programme production activities
- 59.12 Motion picture, video and television programme post-production activities
- 59.13 Motion picture, video and television programme distribution activities
- 59.2 Sound recording and music publishing activities
- 60.1 Radio broadcasting
- 60.2 Television programming and broadcasting activities
- 62.01 Computer programming activities
- 62.02 Computer consultancy activities
- 62.09 Other information technology and computer service activities
- 63.91 News agency activities
- 63.99 Other information service activities n.e.c.
- 64.91 Financial leasing
- 65.11 Life insurance
- 65.12 Non-life insurance
- 68.10 Buying and selling own real estate
- 68.20 Renting and operating of own or leased real estate
- 68.32 Management of real estate on a fee or contract basis
- 69.1 Legal activities
- 69.2 Accounting, bookkeeping and auditing activities; tax consultancy

- 70.10 Activities of head offices
- 70.21 Public relations and communications activities
- 70.22 Business and other management consultancy activities
- 71.11 Architectural activities
- 72.11 Research and experimental development on biotechnology
- 72.19 Other research and experimental development on natural sciences and engineering
- 73.11 Advertising agencies
- 73.12 Media representation services
- 74.10 Specialised design activities
- 74.2 Photographic activities
- 74.90 Other professional, scientific and technical activities n.e.c.
- 77.29 Renting and leasing of other personal and household goods
- 78.1 Activities of employment placement agencies
- 78.2 Temporary employment agency activities
- 79.11 Travel agency activities
- 79.12 Tour operator activities
- 79.9 Other reservation service and related activities
- 82.11 Combined office administrative service
- 82.30 Organisation of conventions and trade
- 82.99 Other business support service activities
- 84 Public administration and defence; compulsory social security
- 86 Hospital activities
- 87 Residential care activities
- 90.01 Performing arts
- 90.02 Support activities to performing arts
- 90.03 Artistic creation
- 90.04 Operation of arts facilities
- 91.01 Library and archive activities
- 91.02 Museums activities
- 91.03 Operation of historical sites and buildings and similar visitor attraction
- 92 Gambling and betting activities
- 96.09 Other personal service activities n.e.c.

Table A.2. Detailed GVA, Employment, Consumer spending and Turnover tables, 2014.

Olympic sport	GVA £m	Employment (thousands)	Consumer spending £m	Turnover £m
Archery	107	3.7	130	206
Athletics	2112	68.8	1,728	4,081
Badminton	795	25.4	815	1,539
Basketball	619	20.6	864	1,182
Boxing	406	13.7	468	772
Canoeing	270	8.6	321	558
Cycling BMX	112	3.6	105	212
Cycling Mountain Bike	1207	39.1	1,132	2,290
Cycling Road	2310	74.9	2,167	4,384
Cycling Track	118	3.8	111	224
Swimming/diving	3239	108.8	3,236	6,219
Equestrian Dressage	448	18.8	693	964
Equestrian Jumping	377	15.9	583	811
Fencing	22	0.7	18	43
Gymnastics	520	15.7	535	1,038
Handball	5	0.2	5	10
Hockey	243	7.9	249	461
Judo	46	1.3	45	94
Rowing	185	6.0	219	398
Sailing	291	9.9	352	612
Shooting	620	19.3	490	1,178
Table Tennis	713	23.4	737	1,355
Taekwondo	60	1.9	55	116
Trampoline	95	3.2	87	189
Triathlon	91	3.0	83	173
Volleyball	129	4.2	141	243
Water Polo	13	0.4	13	24
Weightlifting	419	12.2	505	864
Wrestling Freestyle	33	0.9	35	67
Wrestling Greco-Roman	33	0.9	35	67
Baseball/Softball	56	1.8	59	106
Karate	85	2.6	87	165
Skateboarding	20	0.6	24	41
Climbing	250	8.6	355	486
Surfing	53	1.9	57	106

<b>Winter Games</b>				
Alpine Skiing	126	4.0	184	243
Free Style Skiing	29	0.9	42	55
Cross Country Skiing	6	0.2	8	11
Curling	6	0.2	8	13
Skating	432	13.0	734	871
Ice Hockey	17	0.5	17	32
Nordic Combined	29	0.9	42	55
Snowboard	34	1.1	50	66
<b>Paralympics</b>				
Alpine Skiing	7	0.2	10	14
Archery	2	0.1	3	4
Athletics	128	4.3	102	247
Badminton	63	2.1	63	123
Boccia	1	0.1	1	2
Canoe	32	1.0	37	65
Cycling	622	20.5	576	1,181
Equestrian	76	3.2	116	164
Football	401	13.6	471	755
Judo	13	0.4	13	27
Power lifting	4	0.1	4	8
Rowing	9	0.3	10	19
Sailing	76	2.6	91	160
Shooting	116	3.6	92	220
Sitting Volleyball	4	0.1	4	8
Swimming	382	12.8	382	733
Table Tennis	48	1.6	49	90
Taekwondo	13	0.4	11	25
Triathlon	5	0.2	5	10
Wheelchair Basketball	42	1.4	57	80
Wheelchair Curling	1	0.0	1	2
Wheelchair Fencing	4	0.1	3	8
Wheelchair Tennis	36	1.2	37	68
<b>Total</b>	<b>18,867</b>	<b>623</b>	<b>19,766</b>	<b>36,639</b>
<b>Total as % of sport</b>	<b>55.0%</b>	<b>58.0%</b>		