CBI Economics

In partnership with:

BHTA British Healthcare Trades Association

Healthtech's economic impact in the UK

The economic contributions of the UK's prosthetics and orthotics sector

Contents

Foreword

The prosthetics and orthotics (PO) sector plays a critical role in the UK's healthcare landscape, providing essential support to individuals with disabilities, injuries, and long-term conditions. This report highlights the sector's important contributions to public health, the economy, and innovation.

The PO sector plays a vital role in improving the quality of life for thousands, including UK service personnel and people with diabetes. With an ageing population and rising cases of conditions like obesity and cardiovascular disease, the demand for these services is set to increase. The sector's importance extends beyond the NHS, making it a key partner in addressing wider public health challenges.

Economically, the PO sector generates £274 million in Gross Value Added (GVA) and supports nearly 4,000 jobs across the UK. This high-productivity sector, characterised by above-average wages, creates a substantial ripple effect through its supply chains and employee spending, further boosting the economy.

To sustain and expand these contributions, investment in the workforce is crucial. The sector faces a significant labour shortage, with hundreds more prosthetists and orthotists needed to meet demand. Prioritising education, training, and career development will ensure a steady supply of skilled professionals ready to meet growing need and drive further innovation.

Innovation, such as 3D printing, is poised to revolutionise prosthetics and orthotics. However, challenges remain, particularly in the sector's relationship with the NHS, where procurement practices and a perceived resistance to innovation have created obstacles. The BHTA advocates for a more strategic, patient-centred approach to procurement, ensuring the sector can continue to innovate and provide high-quality care.

The PO sector is not only essential to the UK’s healthcare system but also a dynamic contributor to the economy, with significant potential for future growth through workforce investment and innovation.

David Stockdale

Chief Executive Officer, British Healthcare Trades Association

Executive summary

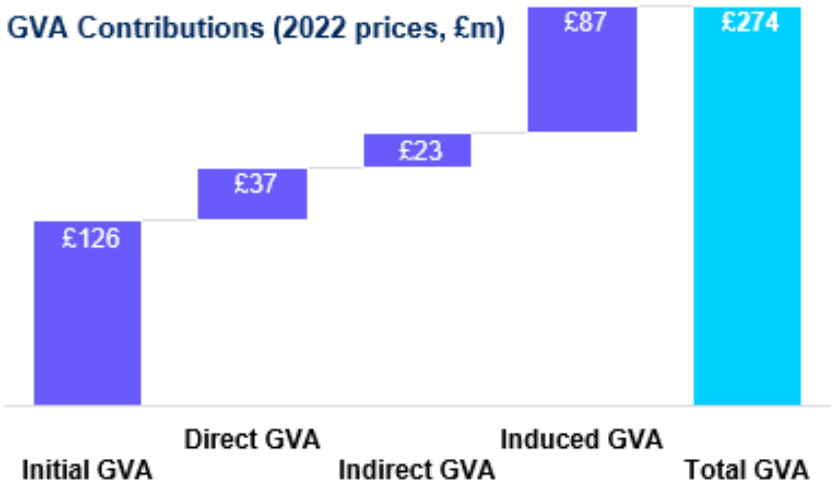
263

Companies are operating within the PO sector, with a total number of business units of

417

13% **13% of all businesses in the sector are growing at an annual rate of 10% or higher, whilst 73% are considered micro-businesses (<10 employees).**

24% **24% greater productivity in the PO sector compared with the broader healthcare sector. PO businesses generate £60.0k in GVA per FTE job.**

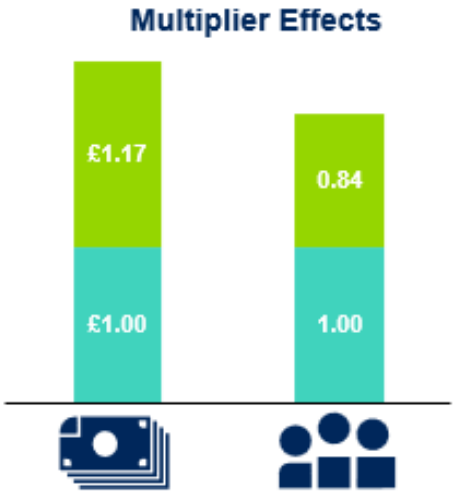


£274m

Total GVA contributions of the PO sector

3,900

Total FTE jobs supported by the PO sector



For **every £1 of GVA directly created** by PO companies a **further £1.17 is generated** throughout the supply chain.

For **every FTE job directly supported** by PO businesses an **additional 0.84 FTE jobs are supported** across the UK economy.

1 Introduction

CBI Economics was commissioned by the British Healthcare Trades Association (BHTA) to build an evidence base around the market size and scope of key healthcare technologies sectors, one of which is the **prosthetics and orthotics (PO)** sector.

This report provides new insight into the economic contributions of this sector.

- **Chapter 1** introduces the PO sector and explains why it is crucial in treating physical disabilities, enabling more comfortable, high-quality lifestyles.
- **Chapter 2** provides an overview of PO’s market and operational environment and presents some of its activities and businesses.
- **Chapter 3** showcases the economic contributions of the PO sector in terms of employment and Gross Value Added (GVA).

1.1 Prosthetics and orthotics are an essential facet of NHS delivery

These services play an essential role in enabling quality of life for people with long-term conditions, disabilities, and limb loss. In 2018, it was estimated that the total number of patients with an amputation or congenital limb deficiency attending specialist rehabilitation service centres in the UK was 55,000-60,000.[1] Amputation is also seen as one of the most destructive complications of diabetes, and almost 8,000 major diabetic lower limb amputations were reported in England between 2017 and 2020. There were over 21,000 minor lower-limb amputation procedures for people with diabetes, the cost of which has been estimated at almost £1 billion a year. [2][3]

Many former UK service personnel require the services of the PO sector. In the five years to March 2023, the number of UK service personnel with partial or complete amputations totalled 66.[4] However, in the five years prior to this, the number totalled 176. Across the Afghanistan and Iraq wars, 329 service personnel had a traumatic or surgical amputation.[5] For the Afghanistan war alone, it is estimated that the total 40-year cost of the UK Afghanistan lower limb amputee cohort is £288 million.[6]

Orthotics are also, often, an integral part of the treatment for children with physical disabilities. The Centre for Economics and Business Research estimated that, in 2013, the cost of treatment for disabled children was just under £1.9 billion. However, only £200 million was spent on equipment, which it deemed to be a notable under-provision that is worsening existing conditions and leading to complications that necessitate additional medical intervention. It suggests that providing disabled children with the equipment they need will reduce avoidable pain and suffering, provide cost savings, and benefit carers.[7]

Although data is unclear, NHS England has previously suggested as many as 1.2 million people are treated by orthotics services. It is anticipated that this will grow further in the context of an ageing population, as most people requiring orthotics services are over 50. Other factors affecting growth in demand are the rising prevalence of obesity, cardiovascular and peripheral vascular disease, diabetes, and stroke.[8]

[1] NHS England (2018) Service Specifications: Complex Disability Equipment
[2] Department of Health and Social Care (2021) Public health profiles: England
[3] NHS Resolution (2022) Diabetes and lower limb complications
[4] Ministry of Defence (2023) UK service personnel amputation statistics: 1 April 2018 to 31 March 2023
[5] Ministry of Defence (2018) Amputation Statistics 1 April 2013 – 31 March 2018
[6] Edwards DS et al. (2015) What Is the Magnitude and Long-term Economic Cost of Care of the British Military Afghanistan Amputee Cohort?
[7] Centre for Economics and Business Research (2014) The economic benefits of better provision of equipment for disabled and terminally ill children
[8] NHS England (2015) Improving the Quality of Orthotics Services in England

1.2 Prosthetics and orthotics companies are a key stakeholder for the NHS

The BHTA has made representations regarding a lack of effective collaboration between the NHS Supply Chain (NHSSC), which manages the sourcing, delivery, and supply of health care and food products to the NHS and the UK medtech industry. NHSSC makes products available to NHS purchases on its own internet catalogue. BHTA reported that cost pressures, inflation, and external factors have had negative impacts on the procurement landscape and led to companies removing products from the NHS market, which has detrimental impacts for patients and clinicians and may lead some companies to be driven out of business.

One issue for BHTA members arose when several companies expressed significant concern upon receiving short notice that their contract with NHSSC for artificial limb components would be extended without an opportunity to renegotiate prices. These prices were established three years prior, in 2021, under markedly different economic conditions. One company, facing substantial financial losses, chose to withdraw from the framework after more than a decade of participation. Its distress was exacerbated by a notice on the NHSSC intranet, which inaccurately suggested that the company was withholding products as a negotiation strategy.

The BHTA asserts that the Department of Health and Social Care (DHSC), NHS England (NHSE), and NHSSC must adopt a more strategic, value-based approach to procurement. It advocates for patient-centred plans that balance cost, quality of care, and the ability to respond to emerging challenges. This includes integrating local flexibility with national procurement to meet both environmental and economic objectives.[9] Many BHTA companies have also reported that they feel the NHS, NHSSC, and DHSC are innovation averse. In 2021, the DHSC acknowledged that in the first 12 months of an innovation submission, 180 technologies were submitted but zero were adopted by the NHS.[10]

This evidence underlines the vitality of the PO sector to public health in the UK.

This report will further evidence the contribution that PO sector makes to the UK economy, in terms of employment and value added, discuss the labour market context of the sector and recent innovations, and provide a geographical breakdown of where the PO sector is concentrated.

[9] UK Parliament (2024) Written evidence submitted by British Healthcare Trades Association to the Lords Select Committee on the Long-Term Sustainability of the NHS Committee
[10] Ibid

2 The UK's prosthetics and orthotics sector

This chapter provides an overview of the activities and businesses behind the UK PO sector and the environment they operate in.

2.1 Market overview

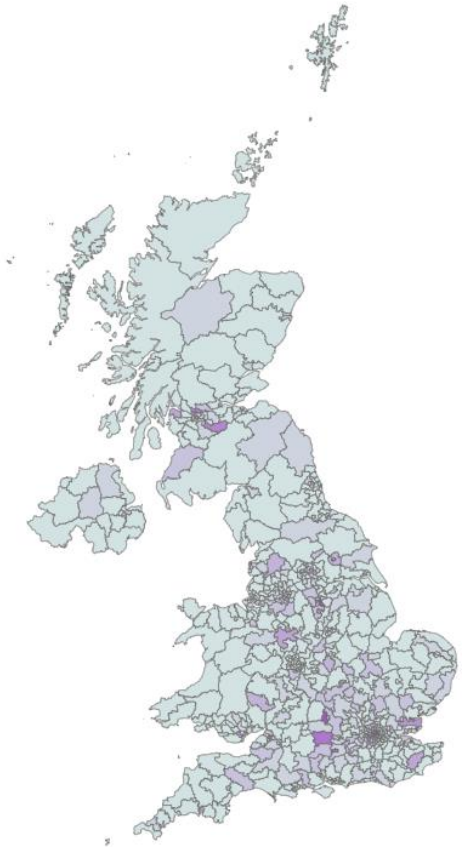
The PO sector involves businesses that manufacture and provide prosthetics and orthotics products to consumers and healthcare providers. Using The Data City, 263 companies were identified as being part of the PO sector.

The PO sector is largely dominated by micro businesses, with 193 having fewer than 10 employees, approximately 72% of the sector. Around 18% of companies in the sector had between 10 and 49 employees, while 6% had between 50 and 249 employees, and only 3% had more than 250+ employees.

Three quarters of businesses in the sector have a stable growth rate, averaging between -10% and +10% annually. In comparison, 30 businesses, equivalent to 13% of PO sector companies, had growth rates above 10%. By contrast, 28 businesses, or 12% of companies, are shrinking at an annual rate of 10% or higher.

The number of business units associated with the PO sector is estimated to be 417. Figure 1, below, shows that there is an even spread of business units throughout the country. However, there appears to be particular concentrations around London and South East England as well as around some of the major urban centres in the North of England and Scotland. By parliamentary constituency, Cities of London and Westminster had the most PO business units with 14. This was followed by Islington South and Finsbury, Oxford West and Abingdon, and Sheffield South East, which each had 9.

Figure 1: The national distribution of PO sector business units



Source: CBI Economics analysis on data from The Data City (2024)

2.2 Operating environment

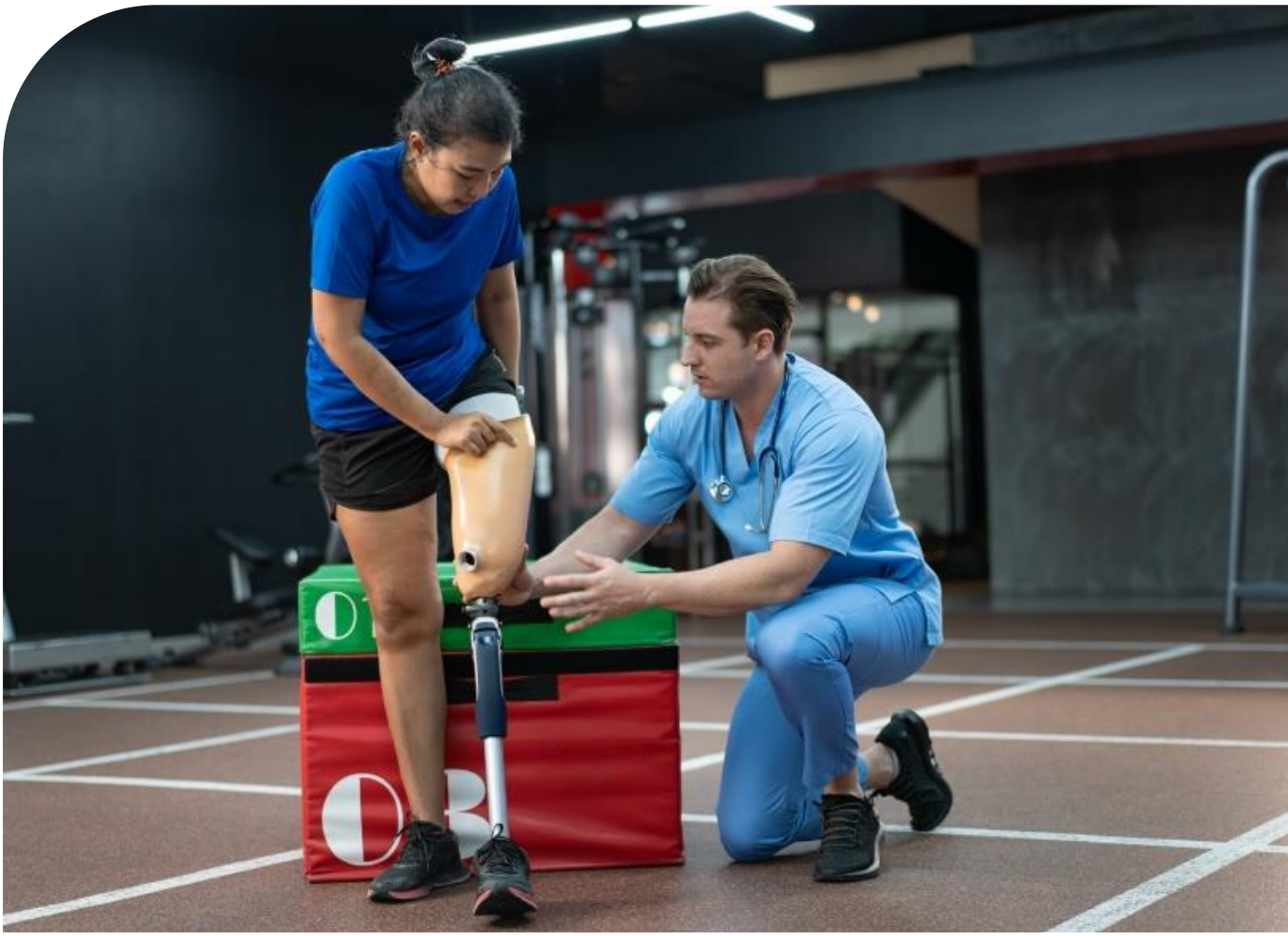
There is a significant labour deficit in the PO sector. A report from the Centre of Biomechanics and Rehabilitation Technologies, commissioned by the British Association of Prosthetists and Orthotists, found that there are currently 631 orthotists and 295 prosthetists employed nationwide. However, an additional 132 to 477 prosthetists and orthotists are needed to meet World Health Organization (WHO) standards of care.[11] The study also found a shortage of 1,133 to 1,803 individuals by WHO benchmarks, with significant recruitment challenges reported by both NHS and private sector employers.[12]

In the past, concerns have been raised over the cost effectiveness and lifespan of prosthetics. However, the Healthcare Technologies Institute has identified 3D metal printing, also referred to as additive manufacturing, as a healthcare revolution that opens up the possibilities for innovations that are both structurally and medicinally customised to the patient.[13] Further, it has been found that 3D printing technology improves the prosthetic supply chain's capabilities in terms of customisation, responsiveness, innovation,

[11] The WHO recommends 15-20 prosthetists and orthotists per million population
[12] Staffordshire University (2023) Landmark study reveals critical shortage in UK prosthetic and orthotic workforce
[13] www.birmingham.ac.uk/research/healthcare-technologies/better-prosthetics

environmental sustainability, cost minimisation, and patient empowerment.[14] Indeed, in 2021, a patient was fitted with a 3D-printed prosthetic eye for the first time ever. Traditional prosthetic eyes take about six weeks to complete, whereas a prosthesis can be printed within two and a half hours, with the whole process taking just two to three weeks.[15] Elsewhere, there has been demonstrable success in using 3D printing to create a chest wall prosthesis for cancer patients. The current method can be very expensive, exceeding £10,000, and surgeons will often need to remove part of the chest wall. However, the 3D-printed mould method costs around £40 per unit.[16]

Additive manufacturing is a burgeoning element of innovation within the PO sector that can deliver time and money savings to producers. However, it is clearly still in exploratory phase, and a strong policy framework will be required to ensure it is disseminated appropriately and the benefits can be shared widely.



[14] Al-Masaa'fah, W., Abushaikha I. and Bwaliez, O M. (2024) Exploring the role of additive manufacturing in the prosthetic supply chain: qualitative evidence
[15] UCL (2021) First patient fitted with 3D printed eye
[16] Kings College London (2023) Researchers successfully 3D print prosthesis for cancer patients

3 The contributions of the prosthetics and orthotics sector to the UK economy

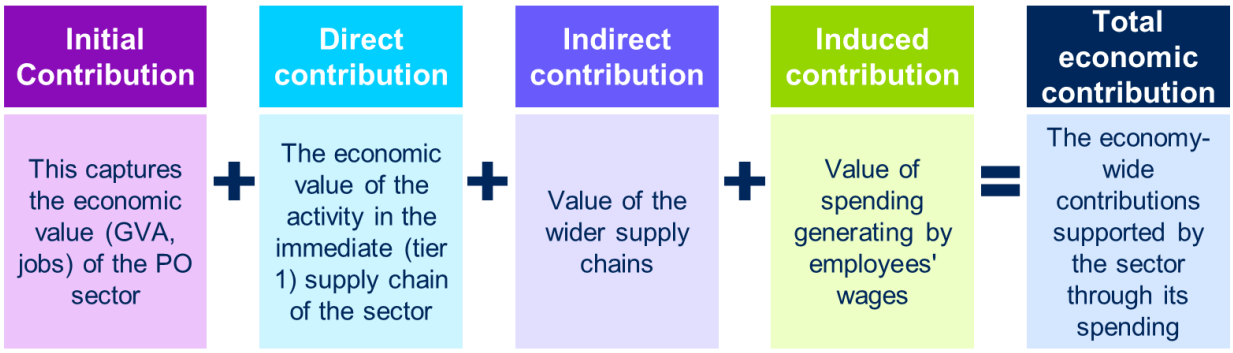
This chapter showcases the economic contributions of the PO sector in terms of the employment opportunities it creates across the UK and the Gross Value Added (GVA) generated.[17,18]

3.2 Methodological approach

For the purposes of this study, the PO sector is defined as the businesses that manufacture and provide prosthetics and orthotics products to consumers and healthcare providers. Our analysis leveraged The Data City's machine learning tool to scope the sector.[19]

To understand the full contribution of the sector, it is important to look at its relationship with the wider economy and the knock-on effects induced by the initial activity of businesses that are part of the sector. The initial activity involves businesses that sell and provide PO products. To facilitate this activity, inputs need to be sourced through the supply chain, such as manufacturers. The activity of the wider supply chain is also considered, as well as the spending of employees.

Figure 1: Components of our economic contribution metrics



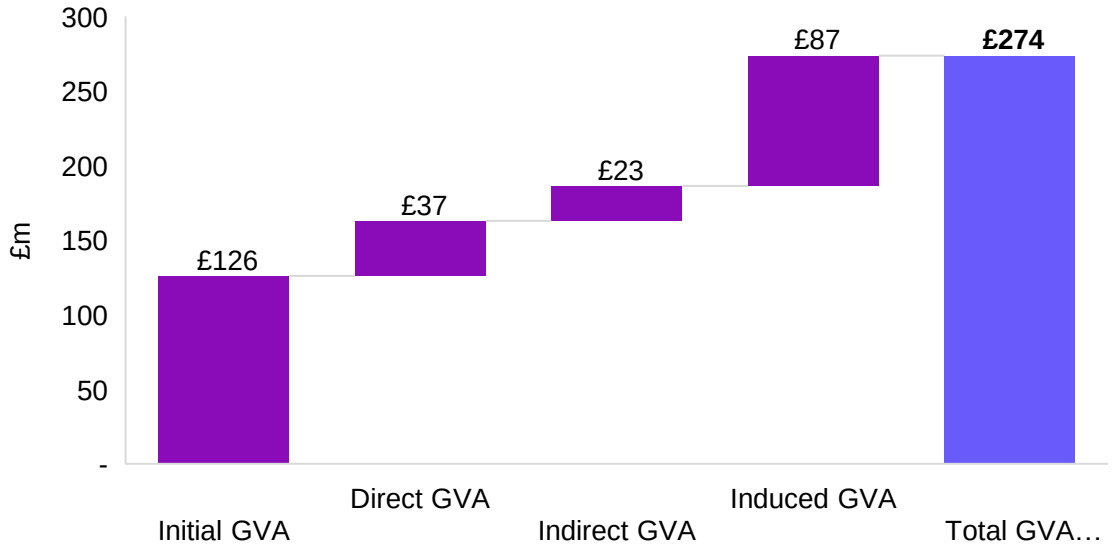
Source: CBI Economics

[17] GVA (Gross Value Added) is the income generated by a company or industry, which can be re-spent or reinvested, creating additional value. It is the sum of gross operating profits, wages and salaries, self-employment income, and taxes (less subsidies) on production.
[18] Employment is measured in full-time equivalent (FTE) jobs. FTE is an employment metric which accounts for the average number of hours worked by an employee. One FTE is assumed to work an average of 37 hours per week. An individual working more than this average would be counted as more than an FTE and vice-versa.
[19] This tool uses natural language processing to identify businesses linked to certain keywords, or similar, to a training set of businesses. The sector was scoped through an iterative process, in consultation with the BHTA, to arrive at a final set of businesses operating within the PO sector.

3.2 Prosthetics and orthotics generate £274 million in gross value added for the UK economy and support 3,900 FTE jobs

The PO sector generated £126 million in GVA in 2022 through its initial activities across the UK, employing 2,100 full-time equivalent (FTE) jobs. However, once PO's wider contributions to the economy (as set out in **Figure 3**) are considered, the total value supported by the sector rises to £274 million in GVA, supporting a total of 3,900 FTE jobs. In the context of the whole UK economy, these total contributions are equivalent to 0.01% of the UK economy, in both value added and employment terms.

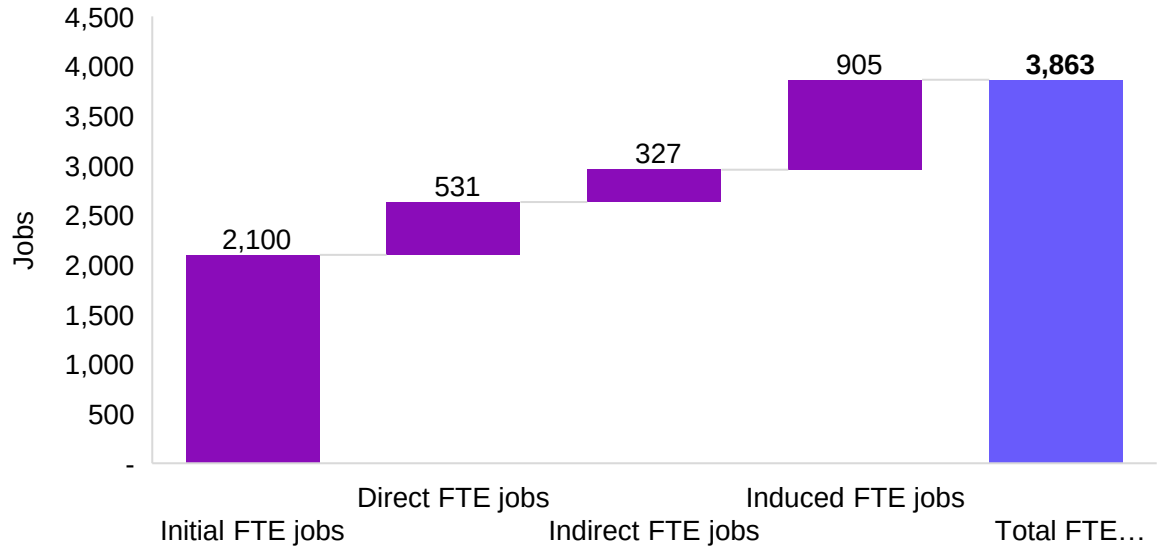
Figure 3: Total GVA contributions of the PO sector (£m, 2022 prices)



Source: CBI Economics

The supply chains required, to support the activity of PO companies, generate significant value for the UK economy. In value added terms, the supply chain generated an additional £60 million and 860 FTE jobs in terms of employment.[20] When taking into consideration the additional £85 million in GVA and 900 FTE jobs supported by employee spending, for every £1 generated by the PO sector, an additional £2.17 in value was generated within the wider UK economy. Similarly, for every FTE job supported within the PO sector, an additional 0.8 FTE jobs were supported within the UK.

Figure 4: FTE jobs supported by the PO sector, 2022



Source: CBI Economics

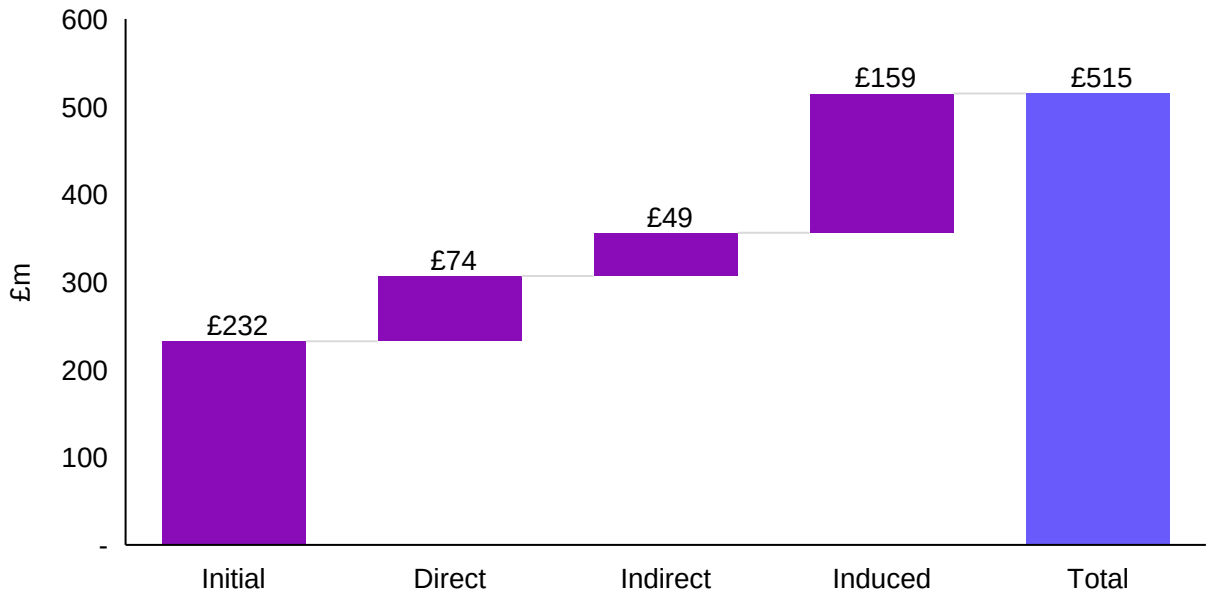
Companies that are part of the PO sector were more productive than comparable sectors, such as health and social care. PO sector companies produce an estimated £60,000 in GVA per FTE job, which is 24% higher than the wider health and social care sector, £48,425 in GVA per FTE job. This higher productivity translates into stronger average wages within the PO sector than comparable industries, with yearly wages within the PO sector at an estimated £31,100, measuring £2,900 higher than the health and social care industry (£28,200).

This analysis also scoped the size of the PO sector in output terms. While GVA covers the income generated by the sector and the value added to its inputs, total output figures are broader and incorporate GVA in addition to the cost of these sector inputs, generating a figure for total production value.[21] The economic activities of PO businesses collectively add

[20] The total impact within the supply chain is captured by adding the direct and indirect effects together.
[21] Cost of inputs may also be referred to as production costs and are comprised of three components: cost of imported inputs, cost of domestically sourced inputs, and taxes less subsidies on products. Output therefore constitutes this cost of inputs plus the value added to these inputs (GVA), the components of which are described in footnote 25, as GVA is a subset of output.

up to a total production value of £232 million, which rises to £515 million in total output contributions when the activities supported across the wider economy are included.

Figure 5: Total output of the PO sector (£m, 2022 prices)



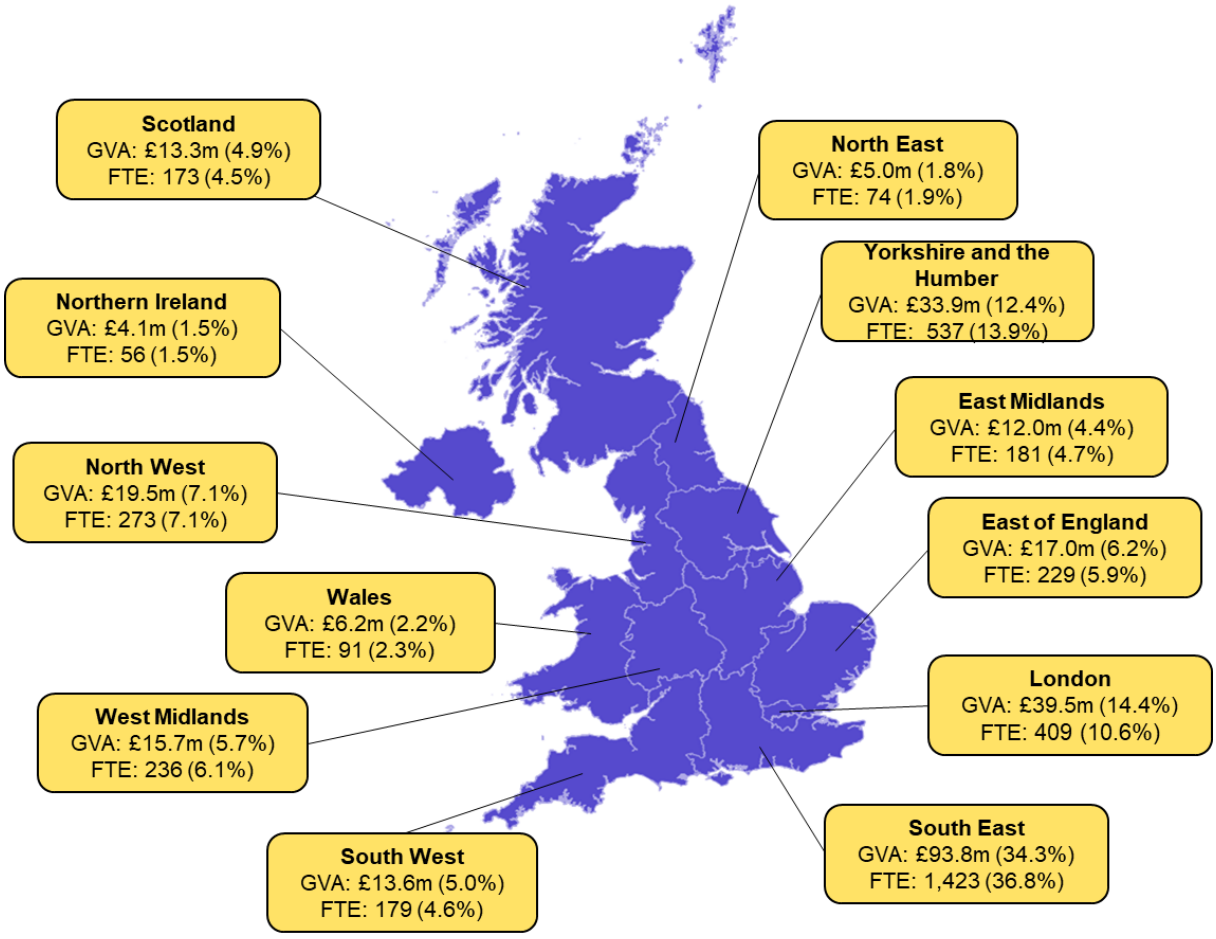
Source: CBI Economics

3.3 Regionally, the PO sector is concentrated in South East England, with more than a third of its value generated by activities in this region

South East England has a considerably larger PO sector, in absolute terms, compared to the rest of the country. PO activity contributed £93.8 million in GVA and 1,425 FTE jobs to the South East economy, which is approximately 34% of the PO sector's UK GVA contributions and 37% of the sector's UK employment contributions. For London, these figures stood at a smaller, but still sizeable, £39.5 million in GVA and 410 FTE jobs, equivalent to 14% of the sector's UK GVA contributions and 11% of the sector's employment contributions.

Another region that benefits significantly from the sector is Yorkshire and the Humber, which accounts for over 12% of national PO associated GVA (£33.9 million) and FTE employment (535).

Figure 6: Regional breakdown of the economic contributions associated with the PO sector (% of total sector contributions)



Source: CBI Economics

3.4 Conclusion

The sector provides life-changing care for thousands of people across the UK, including UK service personnel and people with diabetes. NHS England has estimated that as many as 1.2 million people are treated by orthotics services, a figure only likely to grow with an ageing population and a rising prevalence of obesity, cardiovascular and peripheral vascular disease, diabetes, and stroke. Orthotics are also a crucial element of the treatment for children with physical disabilities.

The PO sector generates £274 million in GVA for the UK economy and supports 3,900 FTE jobs. The full extent of the sector's economic impact is likely to be considerably larger, as the sector endeavors to ensure patients can access employment opportunities, improving their quality of life and providing significant cost savings to the NHS and wider society.

PO companies are essential to the NHS Supply Chain. Alongside other BHTA members, they are keen to engage with key partners to create a more strategic, value-based approach to procurement for the health service, with patient-centered plans that balance cost, quality of care, and the ability to respond to emerging challenges.

Despite the sector’s strength, many consider there still to be an under-provision of orthotics. Labour shortages are a concern, with up to 477 additional prosthetists and orthotists required to meet WHO benchmarks.

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