



The  
University  
Of  
Sheffield.

# Economic Impact Assessment University of Sheffield

A report to the  
University of Sheffield  
25<sup>th</sup> August 2020





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# 1.

## Executive Summary

### 1.1 Key Findings

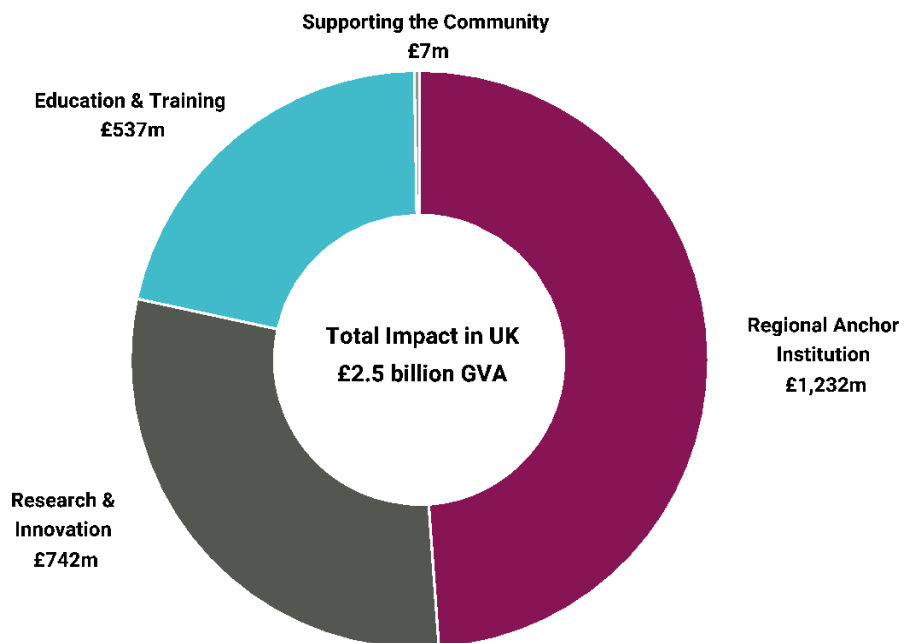
In the academic year 2018/19 the University of Sheffield contributed:

- **£1.1 billion Gross Value Added (GVA)** and **16,700 jobs** in Sheffield City Region;
- **£2.5 billion GVA** and **30,200 jobs** across the UK.

**In 2018/19, the University of Sheffield contributed £3.72 GVA to the UK economy for every £1 of income and almost 4 jobs for each employee.**

In addition to this significant quantitative economic impact, the University of Sheffield supports the civic life of Sheffield City Region. Its civic role is woven through a co-ordinated strategy that delivers meaningful and sustainable impact. It has framed its strategic responsibilities and operations towards this civic goal creating a major contribution to the well-being of the City Region and its people.

**Figure 1-1 GVA Impact by Source**



### 1.2 Introduction

The University of Sheffield was founded on civic values over a century ago and dedication to civic life has been a constant underlying principle throughout the University's history. It is



developing the next stages of institutional commitment to the Sheffield City Region and as part of the process has commissioned this study to explore the economic and wider benefits the University brings to the City Region and the nation.

The economic impacts set out in this report are based on the most recently completed academic year, 2018/19. Since the study was commissioned, the context has changed significantly because of the Covid-19 pandemic. While the study was not commissioned to consider the role of the University in response, it will undoubtedly have a strong role to play in regional recovery and transformation.

The benefits associated with the University arise from four sources:

- the University's role as a **regional anchor institution** through operational activities and impacts generated by staff and students;
- **research and innovation activity** undertaken by the University including knowledge exchange and commercialisation of research outputs;
- **education and training** supported by the University through graduates and continuing professional development courses provided to employees; and
- the University's role in **supporting the community** through the multitude of community activities undertaken by staff and students as well as adding to the cultural vibrancy of the city through the visitors it helps to attract.

Together, these underpin the institution's role as a Civic University.

### 1.3 A Regional Anchor Institution

In 2018/19, the University of Sheffield generated an income of £677 million, it had a student population of almost 29,000 people and it employed almost 7,900 members of staff. The strength of the University's international reputation has created a student population that is drawn from over 150 countries worldwide.

This creates impact of scale through direct turnover and employment, by supporting local businesses with staff spending, building capital assets that sustain the construction sector and through student spending and part time work in the local economy. The University of Sheffield is an anchor institution, playing a strong role in the regional economy through the scale of its operations as well as a strategic focus on its civic role in the regional economy.

Quantitative economic benefits in 2018/19 provide evidence of the scale of this regional anchor. It was estimated that the overall impact of the University of Sheffield as a regional anchor institution contributed £759 million GVA and 15,910 jobs in Sheffield City Region and £1.2 billion GVA and 26,630 jobs in the UK.



**Table 1.1 Summary Regional Anchor Institution Impacts**

	Sheffield City Region	UK
<b>GVA (£m)</b>		
Direct	450	450
Supply Spending	24	199
Staff Spending	73	195
Capital Spending	4	77
Student Spending	133	202
Student Work	74	108
<b>Total</b>	<b>759</b>	<b>1,232</b>
<b>Employment</b>		
Direct	7,880	7,880
Supply Spending	570	4,740
Staff Spending	1,620	4,360
Capital Spending	60	1,140
Student Spending	3,000	4,580
Student Work	2,780	3,930
<b>Total</b>	<b>15,910</b>	<b>26,630</b>

Source: BIGGAR Economics Analysis. \*Totals may not sum due to rounding.

## 1.4 Research and Innovation

The University of Sheffield is a member of the Russell Group of leading research-led institutions and is known for its research excellence. Five Nobel Prize winners have emerged from the University and it was ranked among the top 10 universities in the UK for attracting research grant funding in 2018/19.

The University of Sheffield supports innovation through commercialisation of research outputs and knowledge exchange with businesses. Its approach is focused on working collaboratively with local and global partners to influence policy makers, translate research into practice and discover novel solutions that drive commercialisation.

One of the ways in which research activity is translated into economic activity is through licensing agreements with industry. The vast majority (99%) of the University's licenses were within the Faculty of Medicine, Dentistry and Health.

Research undertaken by the University can also be commercialised directly, through the creation of spin-out companies to bring new products, services and technologies to market. In 2018/19 the University of Sheffield had 31 active spin-out companies which collectively employed 460 people across the UK and had a combined turnover of almost £29 million. The University also provides space for companies to co-locate and benefit from working in collaboration with University researchers and academics. In 2018/19 there were eight companies co-located at the University.



Services provided directly to businesses form an important aspect of the University of Sheffield's knowledge exchange activity. This includes contract research, consultancy, and providing specialist facilities and equipment to businesses. In 2018/19, the University of Sheffield received £33 million in income from these services, with 89% of income arising from contract research agreements.

The University is also an academic participant in the Knowledge Transfer Partnership (KTP) programme, which recruits graduates to work on joint industry academic projects to help companies solve challenging problems. Student placements are another channel through which the University can engage with and transfer knowledge to the wider business community. In 2018/19, there were 368 students of the University who undertook placements for longer than 12 weeks. Most placements were a whole year in industry for engineering students, while the remainder were either one-year placements in science or part of degrees with employment experience.

Finally, the University's health and medical research has a wider impact than can be measured quantitatively. That said, there are useful approaches to describe the scale of some of these impacts. Research by the Wellcome Trust on the value of medical research in the UK considers two types of return: health gains and economic gains, and this study considered both.

In 2018/19, through its research and innovation the University of Sheffield generated £143 million GVA and 730 jobs in Sheffield City Region and £742 million GVA and 3,480 jobs across the UK.

**Table 1.2 Summary Research and Innovation Impacts**

	Sheffield City Region	UK
<b>GVA (£m)</b>		
Licensing	<1	256
Spin-outs	24	39
KTPs	2	9
Services to Businesses	11	249
Student Placements	1	15
Medical Research	104	175
<b>Total</b>	<b>143</b>	<b>742</b>
<b>Employment</b>		
Licensing	<10	1,440
Spin-outs	590	980
KTPs	50	220
Services to Businesses	60	630
Student Placements	20	220
<b>Total</b>	<b>730</b>	<b>3,480</b>

Source: BIGGAR Economics Analysis. \*Totals may not sum due to rounding.



## 1.5 Education and Training

Education provided by the University enables students to become more productive employees after graduation. The University also helps improve workforce productivity by providing training for companies and individuals.

The graduate premium is a measure of the combined personal economic benefit that a year's graduates obtain. In 2016/17, more than 9,000 students graduated from the University (latest available data at the time of writing). Around 25% of the University's UK domiciled graduates remain in Sheffield City Region after graduating.

The University of Sheffield delivers CPD which supports skills development for companies and individuals helping to improve workforce productivity. In 2018/19, CPD courses at the University were attended by more than 19,000 people. The majority of CPD courses at the University were delivered by the Department of Biomedical Science, the School of Clinical Dentistry, and the School of Health and Related Research.

**Table 1.3 Summary Education and Training Impacts**

	Sheffield City Region	UK
GVA (£m)		
Graduate Premium	152	523
CPD	3	14
<b>Total</b>	<b>154</b>	<b>537</b>
Employment		
CPD	10	50
<b>Total</b>	<b>10</b>	<b>50</b>

Source: BiGGAR Economics Analysis. \*Totals may not sum due to rounding.

## 1.6 Supporting the Community

The University of Sheffield supports communities across the region through student volunteering and public engagement work. It also supports the local tourism sector through friends and family visiting staff and students as well as hosting conferences and events in the city.

Students support charities and other organisations by volunteering, helping them carry out community and other charitable work. Sheffield Students' Union offers a wide range of volunteering opportunities. Examples include assisting mental health charities, charity helpline volunteers and preparing and serving meals to the homeless. Around 2,000 students volunteered approximately 20,000 hours in 2018/19.

The University of Sheffield supports the local tourism economy by attracting visitors to Sheffield. Friends and relatives who visit students and staff spend money in the economy and this spending increases turnover in local tourism, retail, and hospitality businesses, which in turn supports local employment.



The University of Sheffield has several unique, high quality venues which are available to hire for academic, corporate, and private events. In 2018/19, almost 32,000 people attended conferences and events at the University, all of whom contribute to economic activity in the region.

In 2018/19, 528,400 people participated in a range of free and charged for events organised by the University of Sheffield. 20% of attendees were to public lectures and 4% to performance arts events and exhibitions. Most attendees (76%) were to other types of events such as schools' workshops and activities, panel discussions, symposiums, film screenings and book launches to name but a few.

The University's students also engage with the local community in a variety of ways. For example, FreeLaw is a student-led legal clinic which provides legal advice to members of the public as well as charitable organisations and small businesses. The University's Architecture Masters students provide consultancy for local organisations through the Live Projects and Live Works initiatives.

Taken together, the combined economic impact of this community support in 2018/19 was estimated to contribute £6 million GVA and 50 jobs in Sheffield City Region and £7 million GVA and 80 jobs in the UK.

As well as this quantifiable impact, the University makes a unique contribution to the cultural vibrancy of the city. The University has co-produced activities such as the Sheffield Music City initiative, Tramlines (the annual music festival), the Festival of the Mind, the Festival of Arts and Humanities, the Festival of Science and Engineering and the Off the Shelf literary festival. The University has also supported the development of place with initiatives such as ReNew Sheffield which secures 'meanwhile uses' for vacant and derelict land. Another example of this is the Grey to Green linear park which replaces a city dual carriageway, reducing flooding risk and creating an inner city green wildlife corridor.

**Table 1.4 Summary Supporting the Community Impacts**

	Sheffield City Region	UK
<b>GVA (£m)</b>		
Student Volunteering	4	4
Visiting Friends & Relatives	<1	1
Conferences & Events	<1	1
Public Engagement	<1	<1
<b>Total</b>	<b>6</b>	<b>7</b>
<b>Employment</b>		
Visiting Friends & Relatives	30	40
Conferences & Events	20	30
<b>Total</b>	<b>50</b>	<b>80</b>

Source: BiGGAR Economics Analysis. \*Totals may not sum due to rounding.





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## 1.7 A Civic University

The University of Sheffield contributes to the economic, social, environmental and cultural life of Sheffield City Region. While most universities are anchor institutions because of their scale, few are truly civic institutions, like the University of Sheffield, with a focussed and deliberate strategy of civic impact that runs through all of its activities. The University has a carefully choreographed approach to civic and partnership work and can track its journey of regional engagement over decades.

The key to successful regional engagement has been a strong and consistent narrative, one that considers the unique contribution made by the University and how it matches the region's economic need and cultural distinctiveness:

- it is integral to the city's health service, from training nurses to delivering cutting edge medical research and co-creation with patient groups to a founding position on the Health and Care partnership;
- it creates innovation-led opportunities for the region across a wide range of industries, a highlight being advanced manufacturing;
- it enhances the cultural life of the region, with the City and Cultural Vibrancy team delivering a wide array of public engagement, including supporting national festivals with international significance hosted in Sheffield; and
- it plays a crucial role in the region's skills system, proactively investing in higher vocational skills with apprenticeships in manufacturing and nursing, and with retention of graduates in the region.

Recognising that partnership and regional engagement is an important part of the University's core mission, the Partnerships and Regional Engagement team was established in 2017, building on decades of engagement work throughout the University. The team fosters relationships with partners and co-ordinates activity to ensure that the University meets local need with a unified and joined-up response.

In February 2019, the University of Sheffield was one of just 30 institutions to sign a pledge to their local communities, committing to produce a "Civic University Agreement" in partnership with local government and other major institutions in their area.

As part of this commitment to its civic role, the regional engagement work programme of the University continues apace. There are four focussed themes: sustainable development, innovation; health and care; and cultural vibrancy. These are supported by a set of four cross cutting enablers: enhancing the physical environment, raising attainment levels in the region; supporting social inclusion; and acting as a role model employer, procurer, broker and trusted civic partner.

## 1.8 Conclusions

The key findings highlighted at the beginning of this summary are set in context. In the academic year 2018/19 the University of Sheffield contributed:

- **£1.1 billion GVA** and **16,700 jobs** in the Sheffield City Region; and
- **£2.5 billion GVA** and **30,200 jobs** across the UK.



The total GVA of the Sheffield City Region in 2018 was £27 billion. The University of Sheffield in 2018/19 supported £1.1 billion GVA for the Sheffield City Region, equivalent to almost 4% of the whole economy.

**Table 1.5 The University of Sheffield's Impact in Context: GVA**

	Sheffield City Region
University of Sheffield GVA Impact (£m)	1,063
Total GVA (£m)	26,959
<i>As % total economy</i>	3.9%

Source: BiGGAR Economics Calculation & ONS (2019), Regional Gross Value Added (Balance Approach).

In terms of employment, of the 579,000 jobs in the Sheffield City Region, the University of Sheffield supports almost 16,700. This is equivalent to 2.9% of all jobs, or one job in every 35.

**Table 1.6 The University of Sheffield's Impact in Context: Employment**

	Sheffield City Region
University of Sheffield Employment Impact (Jobs)	16,695
Total Employees (Jobs)	579,000
<i>As % of total economy</i>	2.9%

Source: BiGGAR Economics Calculation & ONS (2018), Business Register and Employment Survey.

These findings demonstrate that University of Sheffield is an incredibly significant economic player, putting it in a strong position to contribute to economic recovery as we navigate our way out of the Covid-19 pandemic.

The University has already played a role during the pandemic, with its work in the health and care sector in Sheffield City Region being particularly important. It has also played an important economic and social role, signposting businesses to support creating opportunities to sustain an enhanced online presence for the cultural sector.

The University of Sheffield will have important roles to play nationally and in the City Region, driving recovery and transformation. More specifically, these include:

- providing the human and intellectual capital that will be necessary in the North of England, driving the levelling up agenda;
- building the resilience of the regional health and care sector;
- supporting the net zero challenge and the green recovery; and
- providing civic leadership in Sheffield City Region, in the economy, civic society, culture and health.

The recovery and transformation of the UK and Sheffield City Region economies will need to be based on knowledge, skills and innovation if it is to be sustainable and resilient. The University of Sheffield is well positioned to be a source of the human and intellectual capital that will be required.





## 2.

# Introduction

BiGGAR Economics was appointed by the University of Sheffield to carry out an assessment of the University's economic impact in Sheffield City Region and throughout the UK.

## 2.1 Study Objectives and Approach

The University of Sheffield was founded over a century ago on donations from the people of the city. Its civic values and contribution to the city and region have been an underlying principle ever since.

The University is developing a new collaborative strategic vision that will build upon these historic foundations to shape and direct the next stage of its institutional commitment to the region. As part of this process, it commissioned this study to present the University of Sheffield's economic impacts regionally and nationally in an evidenced, quantified and compelling manner.

It is intended that the economic impact assessment will support the University of Sheffield's regional and national policy discussions, provide a benchmark for future regional engagement programmes, support funding applications and marketing and communications activity.

The study included:

- a data collection exercise, sourcing information from the University of Sheffield and providers of statistics about the regional and national economy, in particular the Office for National Statistics;
- a consultation programme with academic and professional services staff to ensure a full and current understanding of the University's strengths and distinctiveness and to identify relevant sources of impact. The consultations were originally scheduled to be undertaken face-to-face but due to the restrictions in place because of the COVID-19 pandemic, some were undertaken as virtual meetings;
- case studies that highlight a range of routes by which the University of Sheffield delivers impacts in Sheffield City Region and in the UK economy, highlighting its distinctiveness among the higher education sector;
- an economic impact assessment was undertaken, based on an Excel model, to describe those sources of impact that could be quantified, based on well-established methods; and
- preparation of this report

## 2.2 University Background

### 2.2.1 History

The University of Sheffield was founded in 1904 as a civic university, funded by penny donations from local residents who understood the benefits the University could bring to the local economy, public health and their children's futures. The generosity of the local



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community meant that £500,000 was raised through the penny donations, equivalent to more than £15 million today.

The University's scale and reputation have continued to grow and evolve. As a member of the Russell Group, the University of Sheffield is now one of 24 leading research universities in the UK, recognised for maintaining outstanding teaching and learning experiences, as well as fostering strong industry and public relationships.

Having established a firm role as a regional anchor institution, the University is well placed to deliver direct economic impacts throughout the City Region and beyond. To repay the generosity of the local community that supported its foundation, the University is committed to providing highly skilled graduates, world-class research and strong relationships with local businesses. The University is part of the fabric of the Sheffield City Region, representing collective ownership and a sense of regional pride that can be traced back to its very foundation.

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**With the launch of four new flagship research institutes, a place in the world's top 100 universities and rated as a top university for student experience, the University of Sheffield is well placed to deliver a significant impact throughout and beyond the region.**

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#### 2.2.2 Scale and Structure

In the most recently completed academic year, 2018/19, the University generated an income of £677 million, had a student population of almost 29,000 people and employed almost 7,900 members of staff. The strength of the University's international reputation has created a student population that is drawn from over 150 countries worldwide.

#### 2.2.3 Awards and Achievements

The University of Sheffield is widely recognised as a leading research institute, particularly due to its status as a Russell Group University. Furthermore:

- it was ranked among the top 10 universities in the UK for attracting research grant funding in 2018/19<sup>1</sup>;
- in 2020 it was ranked in 14<sup>th</sup> place in the UK by the Times Higher Education World University Rankings<sup>2</sup>;
- for many years, it has consistently been ranked within the top 100 universities in the world by the QS World University Rankings<sup>3</sup>.

Five Nobel prize winners have emerged from the University of Sheffield specialising in areas of physiology, medicine and chemistry.

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<sup>1</sup> HESA, Consolidated Statement of Comprehensive Income and Expenditure by HE Provider, 2018/19

<sup>2</sup> <https://www.timeshighereducation.com/student/best-universities/best-universities-uk>

<sup>3</sup> In 2020 the QS Rankings placed the University of Sheffield in =78<sup>th</sup> position globally.



Its alumni include authors, Olympic medallists and the first British person in space, Helen Sharman.

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## The University of Sheffield has been awarded the Queen's Anniversary Prize on five occasions.

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The Queen's Anniversary Prize recognises the innovative, quality research that emerges from universities and the contribution this makes to all aspects of national life.

Such achievements and recognition, combined with the University's unique community history, illustrate the distinct character of the University of Sheffield as an essential part of the city's fabric and a source of regional pride.

### 2.3 Economic Recovery and Transformation

The economic impacts set out in this report are based on the most recently completed academic year, at the time of writing, 2018/19. In 2020, since the study was commissioned, the economic context has changed significantly, as a result of the Covid-19 pandemic.

The study was commissioned before the pandemic and so the aims did not include considering the role that the University could take in response. However, it is clear from the findings set out in this report that the University of Sheffield is a very significant economic player and so can contribute directly to the region's economic recovery.

The University has already played a role in the recovery phase with its support for the health and care sector in Sheffield City Region being particularly important. The University's economic and social role has also been apparent, including signposting businesses to support and its role in developing the Sheffield Cultural Hub with Sheffield City Council to create a digital platform to showcase the city's cultural sector.

As the attention of policy makers turns from rescue to recovery and transformation, it is worth reflecting on the fundamentally important role that universities play in an advanced economy. The source of a country's wealth is knowledge, advances in science and technology and the diffusion of that knowledge. This is what productivity growth is based on and so is a determinant of living standards, as well as the longer lifespans and better health we have seen over the last century.

A thriving universities sector will therefore be an essential prerequisite to addressing UK Government policy priorities and investment in the sector might be expected to be at the centre of economic recovery and transformation plans. This will also be true in the nations and regions of the UK and at City Region level.

The pre-COVID long term economic policies of the UK Government provide a starting point for identifying priorities. These included:

- levelling up the UK spatially, with the north of England (the Northern Powerhouse) particularly identified as requiring investment;
- reaching net zero greenhouse gas emissions by 2050;



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- boosting productivity (including by increasing R&D investment, with a target of 2.4% of Gross Domestic Product set); and
  - investing in infrastructure (supported by the National Infrastructure Commission).

Investment in the universities sector would support these policy priorities, be labour intensive in the short term and productivity enhancing in the longer term, and so would have the effect of:

- contributing to economic recovery (by providing employment that will help replace employment that has been lost in the pandemic); and
- driving economic transformation (since they can deliver productive, inclusive and sustainable growth).

The University of Sheffield will have important roles to play nationally and in the City Region, driving recovery and transformation. More specifically, these include:

- providing the human and intellectual capital that will be necessary in the North of England, driving the levelling up agenda;
- building the resilience of the regional health and care sector (including: the bench to bedside approach in medical research; training doctors, nurses and social workers; transferring the latest research into clinical practice; and promoting a culture of social responsibility in and for the sector);
- supporting the net zero challenge and the green recovery (including the role of flagship research institutes in Energy and Sustainable Food, and established institutions such as the Nuclear AMRC, providing a focus for regional research and development efforts and stimulating investment);
- providing civic leadership in Sheffield City Region, in the economy, civic society, culture and health.

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**The recovery and transformation of the UK and Sheffield City Region economies will need to be based on knowledge and innovation if it is to be sustainable and resilient. The University of Sheffield is well positioned to be a source of the human and intellectual capital that will be required.**

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Universities have a crucial role to play in any advanced economy and they are particularly important in a time of uncertainty and change, the environment we are all living in now and will continue to be for some years to come.

## 2.4 Report Structure

This report is structured as follows:

- Section 3 discusses the framework for our assessment of economic impact and outlines the approach taken to the study;



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- Section 4 assesses the economic impact of the University as a regional anchor through its expenditure on staff, supplies of goods and services, through capital investment in new buildings and equipment and through the combined spending and employment among its student population;
  - Section 5 discusses the impact of the University's research and innovation work which includes licensing agreements, spin-out companies, innovation services to businesses and other knowledge exchange activities;
  - Section 6 describes education and training impact through the enhanced earnings of graduates and continuing professional development services that improve workforce productivity;
  - Section 7 describes how the University supports the community through volunteering, by drawing in people to visit students and staff, hosting conferences and events and through its public engagement work;
  - Section 8 describes the role of the University of Sheffield as a truly civic university; and
  - Section 9 presents our summary and conclusions.







## 3.

# Framework and Approach

This section describes the theoretical framework and approach taken to assess the University of Sheffield's economic impact.

## 3.1 Economic Impact Framework

In advanced economies, economic growth is driven by productivity growth and this, in turn, is driven by the diffusion and exchange of knowledge. Universities play a critical role through their role as providers of knowledge and innovation.

Universities are generators of world-class research and development and play a central role in industry clusters, so they make a significant contribution to economic growth. Indeed, a number of influential economists have published works that set out a theoretical and empirical case for the role that high-level skills and innovation play in boosting economic competitiveness and addressing inequality in society.

In the late 1950s Robert Solow published papers that showed it was not the savings rate or increases in factors of production (labour and capital) that determined the long-run growth rate, but increases in productivity. In the early 1960s Kenneth Arrow published papers on research and development and on learning by doing, which showed that almost all economic growth could be accounted for by innovation. This meant innovation from new ideas emerging from research, as well as improving productivity through learning by doing during the production process.

Building on this, the Nobel prize winning economist Joseph Stiglitz<sup>4</sup> has argued that productivity is the result of learning and, consequently, a focal point of policy should be to increase learning within the economy. The observation is made that even within countries and within industries there can be large gaps between the most productive and the others.

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## The diffusion of knowledge is as important as pushing the boundaries of knowledge.

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The scale of knowledge, research and innovation that takes place is also important because there are dynamic effects that come into play. New knowledge and innovation (the diffusion of knowledge) are based on the foundations of prior knowledge, and high levels of investment give rise to an accelerating pace of innovation. In contrast, cutting levels of investment means the pace of innovation slows because underinvestment compounds over time.

In summary, knowledge and innovation are fundamental to economic growth, which is driven by productivity. Productivity growth is in turn driven by knowledge and its diffusion

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<sup>4</sup> Stiglitz and Greenwald (2014), *Creating a Learning Society: A New Approach to Growth, Development, and Social Progress*.



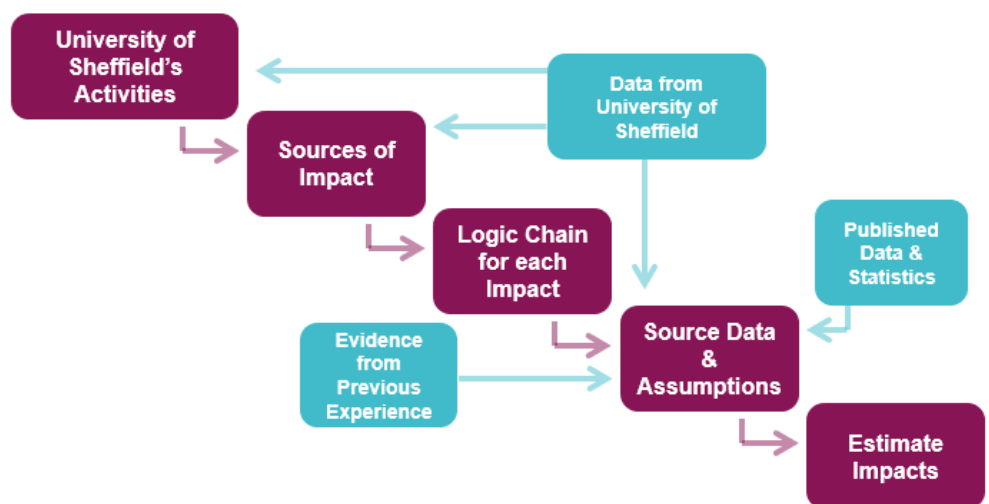
(innovation), putting the role of universities at the centre of economic development policy and practice.

## 3.2 Study Approach and Methodology

### 3.2.1 Study Approach

The overarching objective of this study is to illustrate the scale and breadth of the University of Sheffield's economic impact. The steps involved in this process are illustrated in Figure 3-1.

Figure 3-1 Study Approach



Source: BiGGAR Economics

The starting point for the analysis was to consider the various activities of the University of Sheffield and identify those likely to generate an economic impact.

Logic chains were developed to describe how each type of activity generates economic value and these were used to build an economic model that estimated the economic impact of the University of Sheffield.

### 3.2.2 Units of Measurement

As far as possible, this report expresses the economic value generated by the University of Sheffield using two widely accepted measures of economic impact: gross value added (GVA) and employment (jobs).

- **Gross Value Added (GVA)** is a measure of the value that an organisation, company or industry adds to the economy through its operations. The analysis uses the production approach to measuring this contribution, where the GVA is equal to the value of production less the value of the inputs used. Typically, this is estimated by subtracting the non-labour costs of the organisation from the organisation's total revenue. In the case of the University of Sheffield, this is estimated by subtracting the non-staff operational expenditure (£227 million) from its total income (£677 million); and
- **employment (jobs)** is measured in terms of headcount jobs supported unless stated otherwise.



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One of the reasons these measures are so widely used is that they provide a convenient way of capturing the entire economic impact of an organisation in a single number. While the appeal of such measures is easy to understand, they also have some parameters which should be kept in mind (Section 3.3.1).

The quantifiable outputs from this study have been rounded. Gross Value Added (GVA) figures are reported to the nearest £1 million and jobs figures are rounded to the nearest 10 (nearest 100 in the executive summary).

### 3.2.3 Direct and Wider Economic Impacts

The total GVA and employment impacts of an organisation are derived from three sources: the direct, the indirect and the induced effects.

The direct impact captures the contribution to economic activity that an organisation can claim as being exclusively its own. It is given by an organisation's direct GVA, which is represented by its income less its non-staff operating expenditure, and the number of people it employs. This is estimated by multiplying the turnover it generates by the 2017 Annual Business Survey (ABS)<sup>5</sup> turnover/GVA and turnover/job ratios for the industry where the impact took place. Given that impacts vary across sectors, where possible turnover is attributed to a given industry matching spending to an appropriate Standard Industrial Classification (SIC) code.

Economic activity generators do not exist in a vacuum and, as a result, they have an impact on other economic entities. This is captured by an organisation's indirect and induced contribution and is measured using economic multipliers from the UK Input-Output tables.

The indirect impact captures the contribution made by an organisation through spending within its supply chain, which supports employment and contributes to value added within supplier organisations.

Type 1 multipliers capture the total direct and indirect GVA and employment effect generated by £1 of turnover. Thus, to estimate only the indirect contributions, the Type 1 multiplier is subtracted by 1 and multiplied by the direct GVA and direct employment. To take account of the location of supply chains, indirect impacts are then multiplied by the share of impact that is assumed to occur in a given study area. This assumption is based on data provided by the University of Sheffield relating to the location of its suppliers.

In addition to purchasing supplies, businesses also need to employ staff to transform these inputs into their final products and pay them salaries and wages. The induced impact of an organisation captures its contribution to economic activity arising from its workforce spending their wages and salaries in the economy.

Type 2 Multipliers capture the total GVA and employment impacts arising from £1 of turnover. Thus, in order to single out the induced contribution, it is necessary to subtract the Type 1 multiplier from the Type 2 multiplier and then multiply what is left by the direct GVA and employment contributions. The induced impacts are then weighted by the relative share of household expenditure that is assumed to take place at local level. This is based on analysis of the Household Expenditure Survey<sup>6</sup>.

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<sup>5</sup> ONS (2019), Annual Business Survey 2017

<sup>6</sup> ONS (2019), Family Spending in the UK: April 2017 to March 2018



The Annual Business Survey statistics do not include Value Added Tax (VAT) in the reported industry turnovers and so when considering the economic impact of expenditure focused activity, such as staff spending, student spending or tourism, it was necessary to remove the VAT component of this expenditure. If a sectoral breakdown of the spend was not available, a general approach to estimating the VAT component of the expenditure was used. A European Commission<sup>7</sup> study on VAT structures in 2013 found that 8% of UK household spending was VAT.

#### 3.2.4 Reference Year and Geography

The analysis aims to provide a snapshot of the University of Sheffield's impact in the academic year 2018/19. The economic impact of the University of Sheffield is considered within two study areas:

- Sheffield City Region: the local authority areas of Sheffield City Council, Rotherham Metropolitan Borough Council, Barnsley Metropolitan Borough Council and Doncaster Council; and
- the UK.

#### 3.2.5 Avoiding Double Counting

Given the approach summarised in Figure 3-1 above, it was necessary to adjust some of the calculations to avoid double counting, such as deducting licences from spin-out companies from the calculation of the licensing impact of the University. This adjustment was made as the impact of spin-outs has already been counted in the spin-out impact.

Similarly, aspects of student spending which are counted in the direct impact of the University were also removed to avoid double counting. For example, spending on accommodation is excluded for students who live in University owned accommodation as this is already included in the University's income and therefore its direct GVA impact.

A further example is University spending on fellowships, scholarships and prizes. This is excluded from the University's supply chain impact to avoid double counting with the student spending impact. The multipliers for the student part-time work impact are also adjusted to ensure only supply chain impacts are estimated and not induced (staff spending) impacts. This is to ensure there is no double counting with the student spending impact.

#### 3.2.6 Number Formats

Throughout the report all monetary figures have been rounded to the nearest million and all employment figures have been rounded to the nearest ten jobs. As a result, some table totals do not sum.

### 3.3 Sources of Impact

The quantifiable impacts associated with the University arise from four main sources:

- the University's role as a **regional anchor institution** through its operational activities and the impacts generated by its staff and students;
- **research and innovation activity** undertaken by the University including knowledge exchange and commercialisation of research outputs;
- the **education and training** supported by the University through its graduates and continuing professional development courses; and

<sup>7</sup> European Commission (2013), A study on the Economic Effects of Current VAT Rate Structures



- the University's role in **supporting the community** through the multitude of community activities undertaken by staff and students as well as adding to the cultural vibrancy of the city through the visitors it helps to attract.

Each of these four sources of impact are discussed in more detail below.

The University of Sheffield is a regional anchor institution for Sheffield City Region, through the staff it employs, its expenditure on goods and services and capital and infrastructure projects. Its staff and students spend on goods and services and student undertake part-time employment, supporting the regional economy.

The University's research and innovation activity generates impact through the University's engagement with businesses in the form of consultancy, contract research and Knowledge Transfer Partnerships. Impact is also generated through the commercialisation of research outputs through spin-out companies and licence agreements.

The skills and experience that students gain during their time at the University contributes to the impact that graduates make to the productivity of the economy over their working lives. The University supports skills development and training in the wider community through the continued professional development courses it offers.

The University supports the local community through volunteering by staff and students, which supports local third sector organisations and enables them to carry out activities they might not otherwise be able to. The University attracts visitors to Sheffield through the conferences, weddings, events and festivals it hosts as well as friends and relatives visiting staff and students. These visitors support tourism businesses in the local area through the additional spending they bring.

### 3.3.1 Parameters of the Study

While every attempt has been made to measure the economic contribution of the University of Sheffield as consistently and accurately as possible, there are certain parameters to the study that should be considered.

The report aims to quantify the economic contribution the University makes using the two widely accepted economic measures of GVA and employment. However, using GVA and jobs as a basis for measuring economic contribution gives equal weight to all types of economic activity regardless of their wider value to society. This means that they cannot reflect the fact that some types of teaching or research activity may create different types of value including cultural and social value, as well as economic benefits.

In addition, it is not always possible to quantify all the benefits of the University due to a lack of available data. It is important to note, therefore, that what *can* be counted is not always the most important and as such there will be significant unquantifiable economic contributions associated with the University of Sheffield.

Through its work, the University generates a variety of benefits for the regional economy and for wider society. The value of these outcomes to the individuals affected and to society as a whole simply cannot be quantified. It is therefore essential that the economic contribution of the University of Sheffield be understood as part of this wider context.









## 4.

# Regional Anchor Institution

This section considers the economic impact of the University as a regional anchor institution.

Universities are recognised throughout public policy as anchor institutions, along with hospitals and local authorities, playing a significant role in an area by making a strategic contribution to the local economy. Anchor institutions share several key characteristics:

- spatial immobility: they have strong ties to the geographic area in which they are based through invested capital, mission and relationship to customers and employees;
- size: anchor institutions tend to be large employers and have significant purchasing power. Both these factors influence the level of impact these institutions can have on the local economy; and
- non-profit: these institutions tend to operate not-for-profit as it is much simpler for private businesses to move, meaning there is no guarantee they will continue serving the local community in the long-term.

The University of Sheffield can be considered a regional anchor institution. Its local rootedness and community links mean that the University plays a key role in local development and economic growth. It achieves this in the following ways:

- through the turnover it generated and the staff it directly employs, the University supports economic activity in Sheffield City Region;
- by supporting regional suppliers through the University's purchases of goods and services;
- its staff supporting businesses in the area through their spending;
- by supporting the regional construction sector and regeneration and development through capital investment; and
- through students supporting the local economy through spending and part-time work.

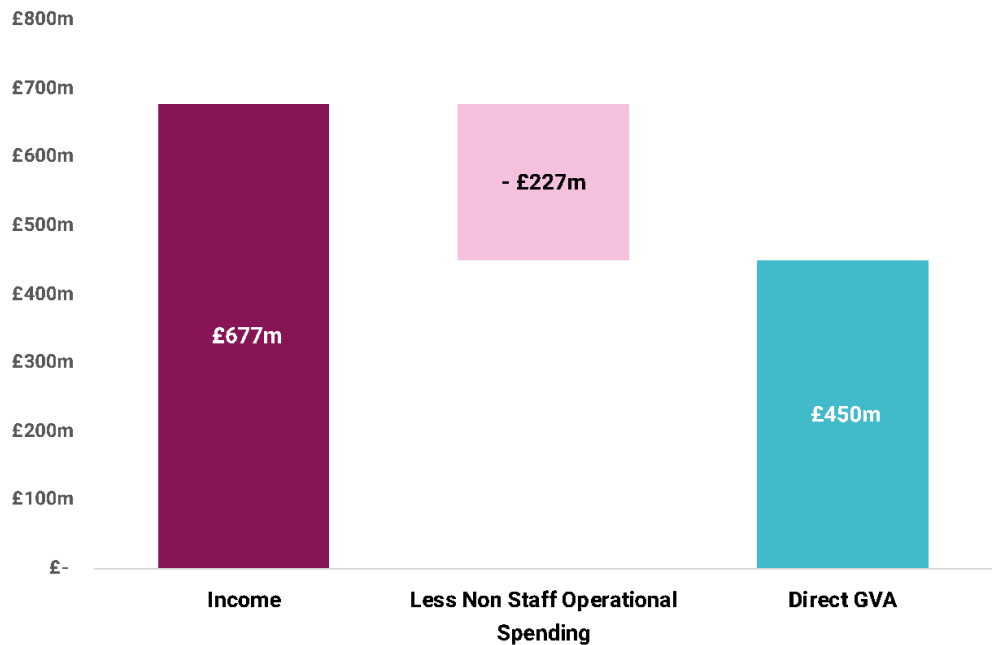
Through all of these mechanisms the University contributes to supporting economic growth and development in Sheffield City Region. The remainder of this section describes the quantitative economic impacts of these in detail. Wider impacts from the University's research, education, community and cultural activities build on its anchoring effect, and these are considered later in this report.

## 4.1 Direct Impact

The direct economic impact of an organisation is generally estimated as the value it adds to the economy in terms of Gross Value Added (GVA), and the employment it supports. Gross Value Added is estimated by subtracting an organisation's expenditure on goods and services from its income.

In 2018/19 the University of Sheffield had a total income of £677 million and spent £227 million on purchasing supplies of goods and services. In addition, the University employed 7,880 people.

**Figure 4-1 Direct GVA of the University of Sheffield 2018/19**



Source: BiGGAR Economics Analysis

Consequently, it was estimated that the University generated a direct impact of £450 million GVA and supported 7,880 jobs in 2018/19.

**Table 4.1 Direct Impact**

	Sheffield City Region	UK
GVA(£m)	450	450
Employment	7,880	7,880

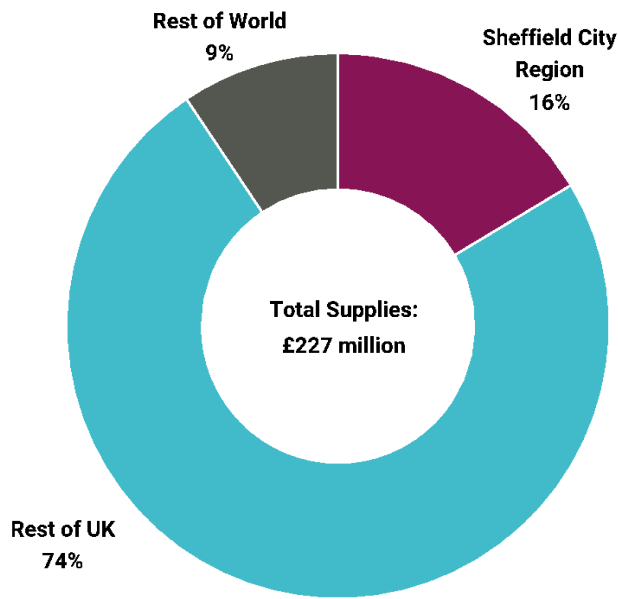
Source: BiGGAR Economics Analysis

## 4.2 Supplier Spending Impact

The University's expenditure on goods and services creates an economic impact by increasing turnover and employment throughout its supply chain. In 2018/19, the University of Sheffield spent £227 million on goods and services. Around 91% of the total was spent on supplies from within the UK and the remaining 9% was spent on supplies from abroad. Expenditure on supplies from within Sheffield City Region accounted for around 16% of total expenditure and supplies from the rest of the UK accounted for the remaining 74% of expenditure.

As discussed further in the Case Study 1: Purchasing in the City Region, the University is taking action to increase the proportion of supplies sourced from Sheffield City Region.

**Figure 4-2 Spending on Supplies, 2018/19**



Source: BiGGAR Economics Analysis. Note: Totals may not sum due to rounding.

It was then necessary to assign each category of expenditure to one of the industrial sectors in the UK’s Standard Industrial Classification (SIC) codes before estimating the economic impact from expenditure on supplies. To estimate the direct GVA and employment contribution for each category, the additional turnover in each sector and study area was divided by the relevant turnover/GVA and turnover/job ratios. The analysis relied on economic ratios from the Annual Business Survey (ABS) and multipliers from the ONS input-output tables.

This initial expenditure on goods and services stimulates further economic activity throughout the wider supply chain (indirect impact). In addition, employees of the University’s suppliers also create a further economic impact by spending their salaries in the economy (induced impact).

In order to estimate the indirect and induced impacts arising as a result of spending on supplies, the calculated direct GVA and employment were multiplied by the UK GVA and Employment Type 1 and Type 2 multipliers. Further explanation of how direct, indirect and induced impacts are estimated is provided in Section 3.2.3.

In this way, it was estimated that supply chain spending by the University of Sheffield generated £24 million GVA and 570 jobs in Sheffield City Region and £199 million GVA and 4,740 jobs in the UK.

**Table 4.2 Supplier Spending Impact**

	Sheffield City Region	UK
GVA(£m)	24	199
Employment	570	4,740

Source: BiGGAR Economics Analysis



## Case Study 1: Purchasing in the City Region

The University has significant purchasing power and has used this to encourage economic activity in the Sheffield City Region.

The University has stimulated local economic development through the procurement of the coffee for its coffee shops. The Accommodation and Commercial Services team at the University of Sheffield runs several coffee shops across campus, selling more than 600,000 coffees each year. When the contract for the provision of coffee beans to these cafes was up for renewal, it was decided to stipulate the successful provider would have to roast the coffee beans locally. This would ensure that a larger share of the value of a typically global supply chain could be captured in the Sheffield City Region. As a result, the successful bidder, Cafeology, opened the first coffee roaster in Sheffield.

### The procurement process was designed to generate value within Sheffield City Region

Approximately 80% of the value of a bag of coffee is captured in the roasting stage. Therefore, by ensuring the coffee they purchase is roasted within the Sheffield City Region, a significantly greater share of this value is retained locally, compared to purchasing from a



national supplier or local wholesaler. The increase in value share captured by Cafeology also results in new employment opportunities created within the company. Many of these jobs are skilled positions and the company has engaged with students of the University and employed graduates to support the development of its own supply chain.



The relationship between the University and Cafeology has also resulted in research opportunities for academics within the University which has benefited the coffee producers which supply Cafeology. All the coffee that is sold by Cafeology is sourced from the CENCOIC Cooperative in Columbia. In 2018 representatives from the University visited the cooperative to explore research opportunities, such as considering how waste coffee bean cherries can be used in anaerobic digestion for local farmers to cook with.

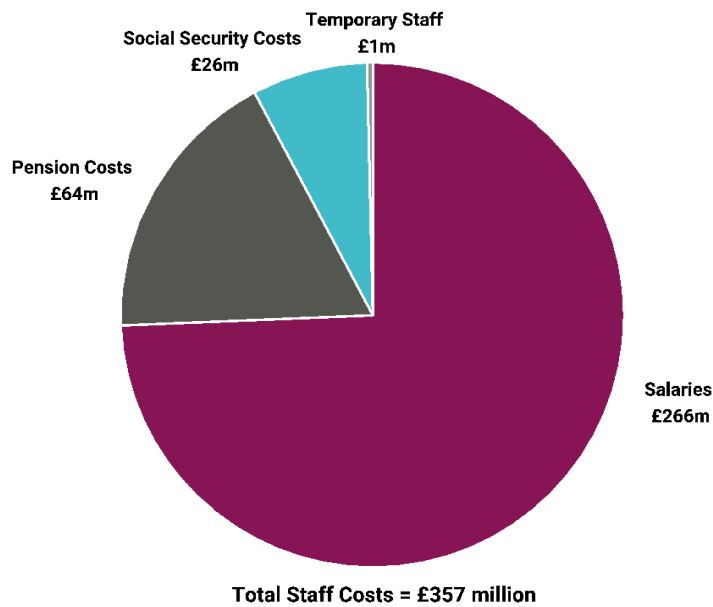
### 4.3 Staff Spending Impact

7,880 staff are directly employed by the University of Sheffield and make an economic impact when they spend their wages and salaries. This supports the businesses they buy from, allowing them in turn to expand their operations and support their own workforces.

In 2018/19 total staff costs at the University of Sheffield amounted to £357 million. The economic impact of this depends on where staff spend their salaries, which in turn depends on where they live. Data provided by the University indicates that the majority of staff (81%) live in Sheffield City Region and a further 19% live elsewhere in the UK.



**Figure 4-3 Staff Costs at the University of Sheffield, 2018/19**



Source: BiGGAR Economics Analysis

Based on an analysis of the Input Output Tables and household spending patterns<sup>8</sup>, it was assumed that members of staff living in Sheffield City Region spent 90% of their income within the UK, of which 60% would be spent in the Sheffield City Region.

**Table 4.3 Staff Spending Matrix**

Where staff live...	Where staff spend...	
	Sheffield City Region (%)	UK (%)
Sheffield City Region	60%	90%
UK	0%	90%

Source: BiGGAR Economics Analysis

Applying these shares to the expenditure arising in each study area, it was possible to estimate the total expenditure, and economic impact, occurring in each study area. In this way, it was estimated that staff spending at the University of Sheffield contributed £73 million GVA and 1,620 jobs in Sheffield City Region and £195 million GVA and 4,360 jobs in the UK.

<sup>8</sup> ONS (2019), Family Spending in the UK: April 2017 to March 2018



**Table 4.4 Staff Spending Impact**

	Sheffield City Region	UK
GVA(£m)	73	195
Employment	1,620	4,360

Source: BiGGAR Economics Analysis



## Case Study 2: Sustainable Travel

Supporting active and healthy journeys.

The University of Sheffield has been promoting active travel for a long time. Its integrated transport policy was first published back in 1997, recognising the pressure on local communities of car travel by students and staff and the challenges of meeting the University community's demand for parking. All income generated from car parking is ring-fenced and reinvested into car park management and sustainable transport initiatives. In 1997 65% of staff drove to work. In 2019, only around 30% of staff use a car to get to work, including those using the car share scheme.



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## Between 1997 and 2019 the proportion of staff driving to work fell from 65% to 30%

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Sustainable travel is promoted across four areas:

- **Cycling:** In 2018-19 the University invested £76,000 in the Cycle to Work scheme, with local cycle shops servicing this wherever possible. There is a Cycle Hut on campus offering free bike checks and at cost servicing, over 1,400 cycle parking spaces, student bike sales and free cycle training to staff and students.
- **Walking:** over a quarter of staff walk to work. The University encourages walking through its wellbeing activities.
- **Public Transport:** discounted travel passes for Sheffield City Region are offered to staff and there is free travel for students to the hospital site. The University purchases and sells around £70,000 of bus tickets each year.
- **Driving:** a car share scheme operates jointly with the Sheffield Teaching Hospitals, sustainable fuels are used within the University's own fleet, and staff and student parking is carefully managed.



The University launched its Step Up rewards scheme in 2018-19 to encourage all forms of sustainable travel. This mobile phone app tracks walking, cycling and bus journeys, allowing people to earn points that can be redeemed in different ways – through local cafes and shops, event tickets, hoodies, raffle tickets and prize draws.

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There is an effect on local businesses of all this work. Active travel has been demonstrated to drive up footfall in businesses through passing custom.

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Over the last ten years, the University has worked with the Heely Trust, a community anchor charity working in Heeley and Meersbrook. One of the Trust's projects is Recycle Bikes, a bike shop that sells and repairs bikes, trains 14-16 years olds and employs apprentices. The Trust has provided over 1,000 bikes to University of Sheffield students over the years and it provides mechanics for the Cycle Hut. This is a contracted service on a three-year term, which provides stability and support to a third sector contractor, in line with the University's ethical procurement practices.

## 4.4 Capital Spending Impact

The University creates economic impact through its spending on capital projects such as the construction of new buildings and investment in new equipment.

Current capital investment projects include a new home for the Faculty of Social Sciences which will help improve the learning experience for students and be a hub bringing together cross-cutting research centres to address key global challenges. The £17 million Translational Energy Research Centre will form part of the University's newly launched Energy Institute and will give global companies and new technology start-ups access to advanced testing facilities and the opportunity to collaborate with academics in low-carbon energy research. Through industrial and academic partnerships, companies will be able to use the research centre to test, optimise and demonstrate their technologies at a commercial-scale.

The Royce Discovery Centre is a £20 million investment that will help build on the University's advanced manufacturing capabilities and transfer knowledge and expertise to local industry. University engineers will use research from the Royce Translational Centre and the new Royce Discovery Centre to develop novel materials and processing techniques, making them accessible for trial by industry. Businesses will be able to access a custom-built space with state-of-the-art equipment for powder manufacturing and processing, enabling them to investigate the feasibility of using new technologies without needing to invest in their own equipment.

Since capital spending fluctuates significantly from year to year, a 10 year average was estimated based on expenditure over the years 2015/16 to 2019/20 and anticipated expenditure over the years 2020/21 to 2024/25. Over this period, the University's average annual capital expenditure amounted to £99 million.

Around 89% of the University's capital suppliers were located in the UK and of these, around 7% were based in Sheffield City Region. Based on this information it was possible to attribute the University's capital spending by study area. The nature of University capital spending projects is that they are often highly complex and large scale. Although every effort is made by Universities to procure local capital suppliers, it can often be the case that local suppliers do not have the capacity to fulfil the requirements of such large scale projects.

In 2018/19, around 37% of the University's capital spending was on furniture, fixtures and equipment and the remaining 63% on the construction of buildings. Each of these types of expenditure were allocated a relevant economic sector. In order to estimate the direct GVA and employment impact arising from capital spending, the turnover occurring in each study



area was then divided by the turnover/GVA and turnover/job ratio for the appropriate sector.

This initial expenditure on capital purchases stimulates further economic activity throughout the wider supply chain (indirect impact). In addition, employees of the University's capital suppliers also create a further economic impact by spending their salaries in the economy (induced impact). These impacts were captured by applying the relevant sector appropriate multipliers.

In this way it was estimated that through its capital spending, the University of Sheffield generated £4 million GVA and 60 jobs in Sheffield City Region and £77 million GVA and 1,140 jobs in the UK.

**Table 4.5 Capital Spending Impact**

	Sheffield City Region	UK
GVA(£m)	4	77
Employment	60	1,140

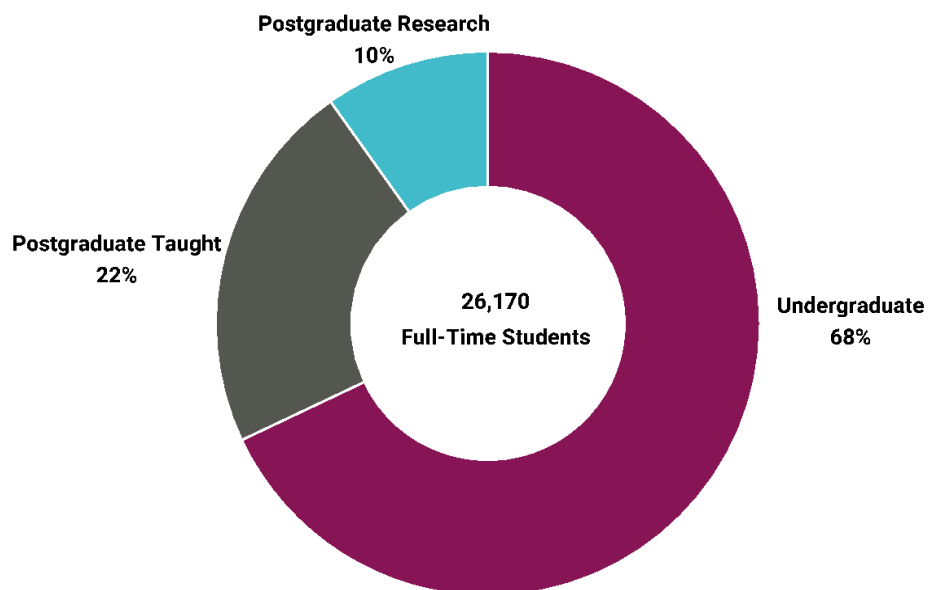
Source: BiGGAR Economics Analysis

## 4.5 Student Demographics

In 2017/18 (latest available data at the time of writing), there were 28,700 students enrolled at the University of Sheffield, of which 26,170 were studying full-time, 1,700 were studying part-time and 820 were distance learners.

Of those studying full-time, 68% were undertaking an undergraduate degree, 22% a taught postgraduate course and 10% were completing a postgraduate research programme.

**Figure 4-4 Full-Time Student Population, 2017/18**

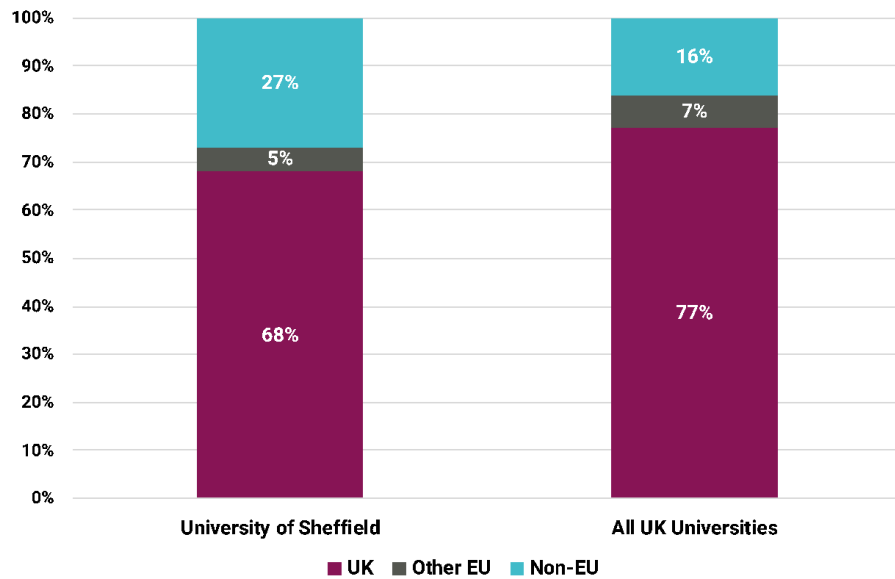


Source: BiGGAR Economics Analysis



Other European Union (EU) and non-EU students comprise 32% of the University's full-time student population. Data from HESA indicates that 27% of the University of Sheffield's full-time students are from non-EU countries. The proportion of non-EU students at the University of Sheffield is significantly higher than the average observed for all UK universities (16%), creating a more internationally diverse student body. Half of the University's non-EU students are Chinese, making it the largest demography other than UK students.

**Figure 4-5 Full-time Student Population by Domicile 2017/18**



Source: HESA, Higher Education Student Statistics, 2017/18

## 4.6 Student Expenditure Impact

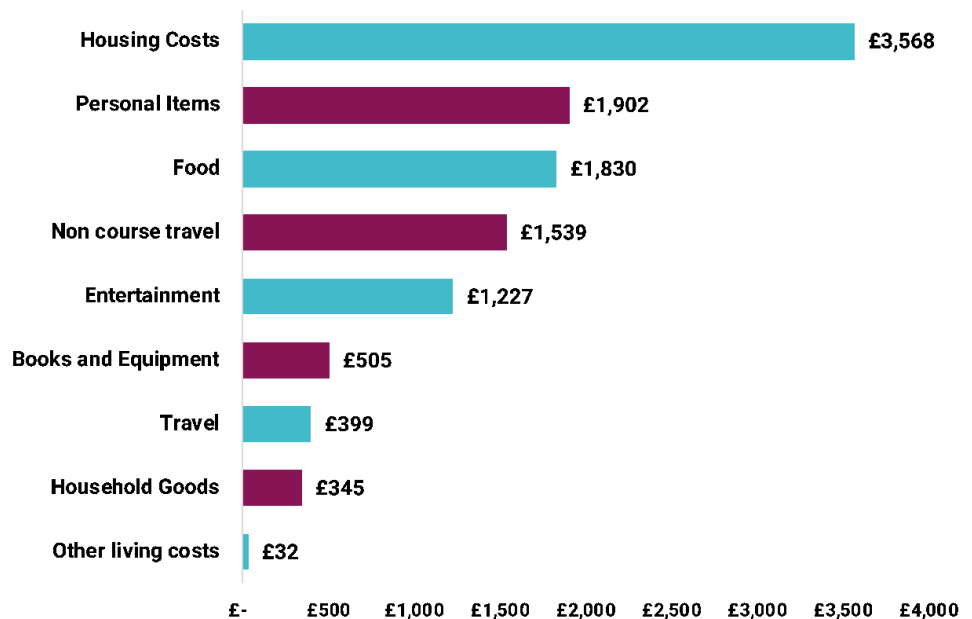
Students contribute to the University's overall economic impact through their expenditure on goods and services during term-time, which benefits local businesses by increasing turnover and supporting employment, whilst also having wider impacts on their supply-chains. Many of these students would not have come to Sheffield to study were it not for the University.

The first step in estimating the impact arising from student expenditure was to establish how much students spend and what they spend their money on. These assumptions were based on the findings of a 2018 study carried out by the Department of Education which surveyed students about their spending habits. The study found that, on average, students living in England (excluding London) spend around £11,300 per year on living costs. The figures were adjusted to account for inflation between 2014/15 and 2018/19.

A breakdown of student expenditure by the main categories of spend is provided in Figure 4-6. Housing costs form the largest component of student expenditure.



**Figure 4-6 Average Annual Student Expenditure in non-London England, 2014/15**



Source: Department for Education (2018), Student Income and Expenditure Survey, 2014/15.

Based on the University of Sheffield's calendar for the academic year 2018/19, it was assumed that undergraduate students spend 29 weeks at the University, while postgraduate students were assumed to spend 52 weeks on campus.

The type of accommodation a student lives in influences their expenditure. For example, students living in their parental or guardian home are unlikely to spend money on housing costs and will spend significantly less on food and household goods. The accommodation expenditure of students in institution maintained properties has already been included in the direct income of the University and so was excluded here.

In this way it was possible to estimate the annual spending of students at the University of Sheffield. This spending was attributed by study area based on data provided by the University which indicates that 94% of students live in Sheffield, a further 1% live elsewhere in Sheffield City Region and the remaining 5% elsewhere in the UK.

The initial student spending stimulates further economic activity throughout the wider supply chain in the economy (indirect impact). In addition, employees in the supply chain also create a further economic impact by spending their salaries in the economy (induced impact). These impacts were captured by applying sector appropriate multipliers.

It was therefore estimated that the expenditure of students at the University of Sheffield contributed £133 million GVA and 3,000 jobs in Sheffield City Region and £202 million GVA and 4,580 jobs in the UK.



**Table 4.6 Student Expenditure Impact**

	Sheffield City Region	UK
GVA(£m)	133	202
Employment	3,000	4,580

Source: BiGGAR Economics Analysis

## 4.7 Student Part-time Work Impact

Students at the University of Sheffield have an impact on the economy by working part-time while studying. This can provide businesses with the additional labour they require to deliver their services.

To estimate this contribution, it was necessary to consider how many students carried out part-time work during their studies, how much time students spent working and which sectors students worked in. According to the Labour Force Survey (LFS), 33% of those aged 18-24, who were in full-time education, were also working in 2017/18. Research from the National Union of Students (NUS)<sup>9</sup> further indicates that students in employment spend on average 14 hours a week working. It was assumed that part-time work took place where students lived during term time and that the sectors that typically employ students in a part-time capacity include catering, retail, private education (e.g. tutoring) and residential care activities.

Finally, it was necessary to estimate how much of the work performed by students was additional, that is, it would not otherwise have been carried out by non-students. The proportion of student employment is therefore assumed to be inversely proportional to the unemployment rate among 16 to 24 years-olds. That is, the higher the level of unemployment among 16 to 24 year olds, the lower the additionality as more people in the area are likely to be in a position to take these roles. However, a proportion of student part time workers will always be additional, regardless of the level of unemployment among 16 to 24 year olds. These are students employed in positions in which their status as a student of the University of Sheffield is a positive attribute, such as students who are employed as tutors for local children. Therefore, a floor of 10% additionality has been set. In the local labour market, where the youth unemployment rate was 8% there will be limited labour market displacement and so it was estimated that the additionality of student labour was 85%.

The direct GVA contribution from part-time work was estimated by applying sector appropriate ratios of GVA per employee to the number of students employed in each sector of the economy. Students who work part-time support local businesses in generating turnover and employing staff which in turn supports the companies in the supply chains of these businesses. This indirect effect was estimated by applying the relevant sectoral multipliers to the direct GVA and employment impacts. To avoid double-counting, the induced effect (i.e. the impact generated by students spending their wages) was not included as this has already been considered in the student spending impact.

<sup>9</sup> National Union of Students Scotland (2010), Still in the Red, Student Finance in 2010.



In this way, it was estimated that through their part-time work, students at the University of Sheffield contributed £74 million GVA and 2,780 jobs in Sheffield City Region and £108 million GVA and 3,930 jobs in the UK.

**Table 4.7 Student Part-time Work Impact**

	Sheffield City Region	UK
GVA(£m)	74	108
Employment	2,780	3,930

Source: BiGGAR Economics Analysis

## 4.8 Regional Anchor Institution Impact Summary

It was estimated that the overall impact of the University of Sheffield as a regional anchor institution contributed £759 million GVA and 15,910 jobs in Sheffield City Region and £1.2 billion GVA and 26,630 jobs in the UK.

**Table 4.8 Summary Regional Anchor Institution Impacts**

	Sheffield City Region	UK
<b>GVA (£m)</b>		
Direct	450	450
Supply Spending	24	199
Staff Spending	73	195
Capital Spending	4	77
Student Spending	133	202
Student Work	74	108
<b>Total</b>	<b>759</b>	<b>1,232</b>
<b>Employment</b>		
Direct	7,880	7,880
Supply Spending	570	4,740
Staff Spending	1,620	4,360
Capital Spending	60	1,140
Student Spending	3,000	4,580
Student Work	2,780	3,930
<b>Total</b>	<b>15,910</b>	<b>26,630</b>

Source: BiGGAR Economics Analysis. \*Totals may not sum due to rounding.





## 5.

# Research and Innovation

The research undertaken at the University supports technological innovation through the commercialisation of research outputs and knowledge exchange with businesses.

The University of Sheffield is a member of the Russell Group of leading research-led institutions and is known for its research excellence across a wide range of disciplines. The most recent Research Excellence Framework in 2014 rated 33% of the University's research as world-leading and a further 52% as internationally excellent. The University is also ranked among the top ten highest earning UK institutions for research grant funding and first in the UK for engineering research income and investment.

The University's research approach is focused on working collaboratively with local and global partners to translate research into practice, discover novel solutions and influence policy makers.







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## Case Study 3: Advanced Manufacturing Research Centre (AMRC)

Established 20 years ago, the University of Sheffield Advanced Manufacturing Research Centre is an exemplar model of advanced collaborative research between academia, industry and government.

The AMRC is working with industry, at scale (in terms of numbers of companies and the size of projects and initiatives), in an area that is critical for UK productivity growth and economic competitiveness; the future of manufacturing.

The industry-led translational research approach taken by the AMRC, based on collaborative research, has become central to UK Industrial Policy, as can be seen in Innovate UK's Catapult model. The AMRC is part of the UK's High Value Manufacturing (HVM) Catapult, working with companies to bridge the gap between technology concept and commercialisation.

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### The AMRC took a pioneering approach to advanced collaborative research, and has become an exemplar model for the UK's Industrial Strategy

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The AMRC has a membership model with 121 partner companies, including well-known large manufacturing and engineering companies such as Rolls-Royce, Boeing and McLaren and also works with hundreds of manufacturing SMEs, many based in Sheffield City Region.

Over the last two decades, an estimated £300 million has been invested in the AMRC's facilities and capabilities, which include machining, advanced structural testing, integrated manufacturing and assembly, composite manufacturing, design and prototyping, medical products, castings, additive manufacturing, metals technology, manufacturing intelligence and modelling and metrology. The AMRC Training Centre also provides training for the next generation of engineers from advanced apprenticeships to higher level skills training. Based alongside the AMRC is the Nuclear AMRC which supports the development of the UK's nuclear energy supply chain. Also part of the High-Value Manufacturing Catapult, it has around 40 industrial members and works with hundreds of other companies across the UK through its manufacturing innovation and supply chain development programmes.

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During the later decades of the twentieth century, deindustrialisation meant that two-thirds of manufacturing jobs in Sheffield City Region were lost. The AMRC has been a catalyst for economic development in the City Region, acting as a magnet for manufacturing multinationals and SMEs and creating significant reputational value.

The routes to impact include:

- upskilling the workforce: providing the skills required for the manufacturing sector in the future including apprenticeships, degree apprenticeships, level 3 and 4 qualifications and CPD;
- delivering step changes in productivity and increasing competitiveness: working with large and small businesses to improve manufacturing processes and develop new products;
- providing access to facilities and expertise: allowing manufacturing businesses access to leading edge R&D infrastructure;
- removing the barriers to new technology adoption: de-risking investment in new products and processes;
- providing industry leadership; and
- attracting investment: the presence of the AMRC makes the City Region an attractive location for manufacturing companies.

The AMRC has an annual turnover of £60 million and employs 680 people in Sheffield, Rotherham, Broughton and Preston, most of whom are highly qualified researchers and engineers. Activities are expanding with a network of collaborative centres being developed across the UK and globally.

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**The AMRC works collaboratively with large multinationals and SMEs, helping to transform the Sheffield City Region**

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## manufacturing proposition from low cost production to high value knowledge

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The AMRC is a driver of inward investment to the City Region. In 2018, McLaren Automotives opened a Composites Technology Centre at the Advanced Manufacturing Park, to build its lightweight carbon fibre chassis for its new road models. It is expected to create more than 200 jobs and provide an estimated £100m of GVA to the regional economy by 2028.

Boeing, one of the University's first industrial partners when the AMRC was established, continues to invest in the AMRC and in the City Region economy. In 2018, Boeing opened its £40 million production facility, its first in Europe, next to the AMRC's Factory 2050.

The AMRC also works with hundreds of SMEs and the evidence of impacts have been identified by the monitoring and evaluation of the HVM Catapult (of which AMRC is a key part). A survey of assisted SMEs found that two-thirds had progressed technology closer to market, 60% had validated a technical or business case for a new product or process and two-thirds had upskilled staff. These benefits are expected to lead to further investment in the SME partners, driving growth in employment and productivity, in Sheffield City Region and elsewhere in the UK.

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### 5.1 Licensing

One of the ways in which research activity is translated into economic activity is through licensing agreements with industry. Licence agreements give companies the legal right to use a particular technology or other type of intellectual property (IP) to generate additional sales, reduce costs or otherwise improve their profitability. In return, companies pay royalties to the University.

The amount of royalties paid depends on the details of the licensing agreement and this can vary considerably from company to company. In order to agree a licensing deal, negotiators must first form a view of how much the IP is worth to the prospective licensee. The '25% rule'<sup>1</sup> is a general rule of thumb based on an empirical study first undertaken in the 1950s and updated in 2002. The study found that royalty rates were typically around 25% of the licensee's profits. This implies that royalties paid for a technology typically represent around 5% of the total turnover generated by that technology. In 2002, Goldscheider<sup>10</sup> analysed the returns by industry and found that the royalties rate varied around the '5% rule' between 2.8% and 8.0%.

Data provided by the University indicates that intellectual property income accruing to the University of Sheffield was just over £17 million in 2018/19. License income from spin-out companies was excluded to avoid double counting. The vast majority (99%) of the University's licenses were within the Faculty of Medicine, Dentistry and Health. In order to estimate the turnover linked to the licences, the revenue derived from royalties was divided by 5.1%, which represents the median royalty rate paid in the biotech and pharma sector. Analysis of the location of licence holders indicates that almost all of the licence holders

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<sup>10</sup> Goldscheider et al. (2002), Use of the 25 Per Cent Rule in Valuing IP.



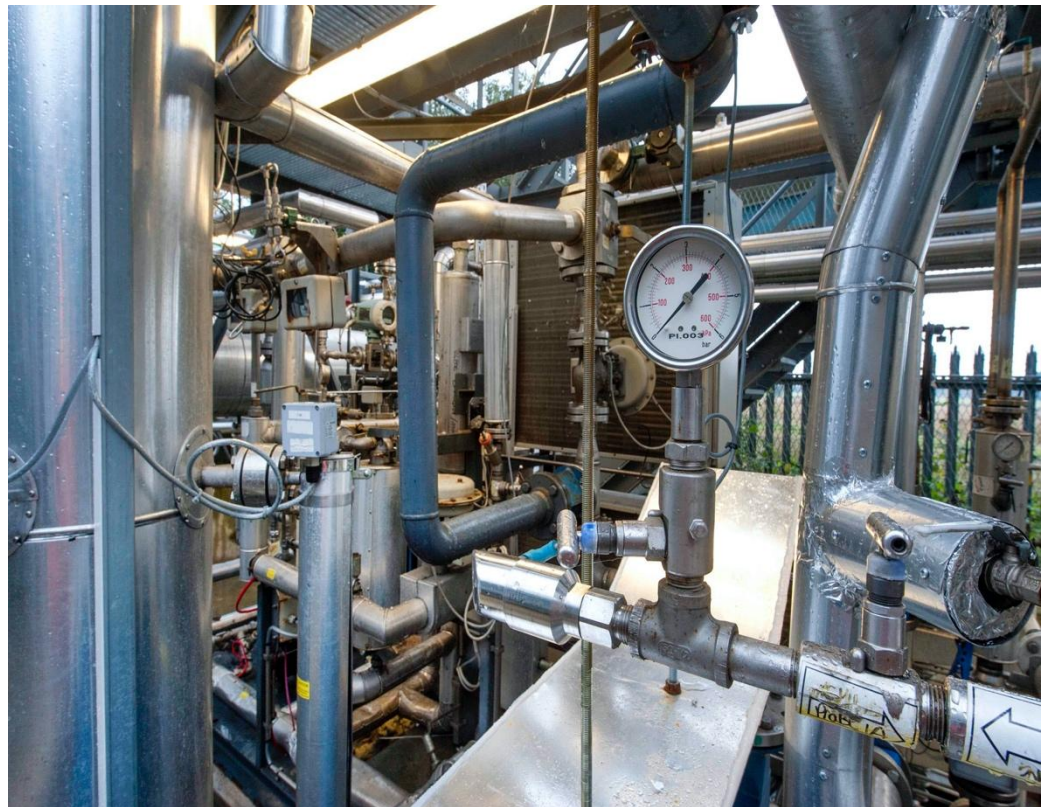
were based elsewhere in the UK. This is to be expected given that most of the University's licences are within the biotech and pharma sectors and major companies within this sector are primarily based outside Sheffield City Region.

In this way it was estimated that licences from the University of Sheffield supported £256 million GVA and 1,440 jobs in the UK.

**Table 5.1 Licensing Impact**

	Sheffield City Region	UK
GVA(£m)	<1	256
Employment	<10	1,440

Source: BiGGAR Economics Analysis



## Case Study 4: Pilot-Scale Advanced Capture Technology (PACT)



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## A national facility bridging the gap between bench and industrial scale R&D.

Hosted by the University of Sheffield at its Beighton Facilities, PACT is a national facility that accelerates development and commercialisation of novel technologies for carbon capture and clean power generation.

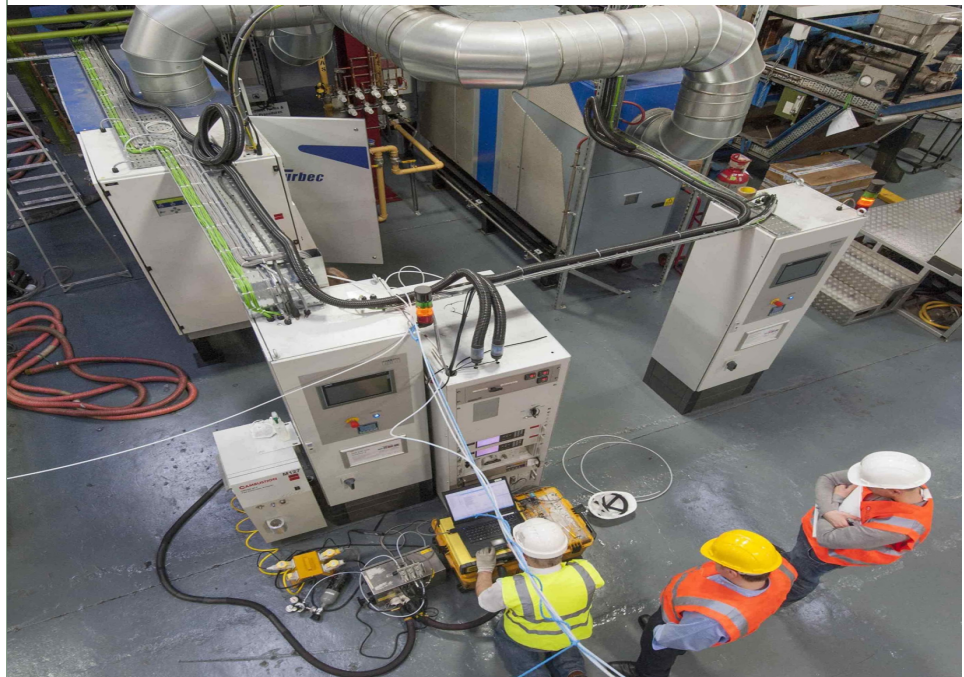
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## PACT ultimately reduces greenhouse gas emissions from power generation and energy intensive industries.

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PACT bridges the gap between bench-scale R&D and large-scale industrial pilot trials in advanced fossil fuel energy, bio-energy and carbon capture technologies. It enables users to develop and demonstrate technologies before committing to the significant costs of large-scale trials. It includes a range of pilot scale plant facilities, state of the art online and laboratory analytical equipment and process and system modelling capability, all supported by leading academic expertise.

Since the facilities were commissioned, PACT has supported over 30 projects with a total value in excess of £40 million and a grant allocation of over £4.5 million. It collaborates with over 40 academic and 80 industrial and other organisations nationally and internationally. PACT attracts over 1,200 visitors from over 300 organisations each year, including fuel producers, power generators, and other major industrial players.



Industrial scale facilities are too expensive for smaller companies and university research groups to use. One company client, for example, developed a new spatial solvent which captures CO<sub>2</sub> and had been developed in the lab. Without PACT, the next option would be



to take it to the National Carbon Capture Centre in the US, an industrial facility. Running and testing four versions of the solvent would cost £7-8 million, creating an insurmountable barrier to innovation. So, the company came to PACT. PACT could do this on a smaller scale and for a fraction of the cost of an industrial scale facility, so the company was able to take the best performing two solvents for large scale trial. This has de-risked the project for this SME, brought a product to market that would not otherwise have been developed, and introduced to the market a new product that addresses the climate emergency.

PACT continues to expand and develop. It has secured funding for a second building focussed on creating sustainable aviation fuel. This is part of a national effort to deliver the Decarbonisation Road-Map for UK aviation.

## 5.2 Spin-out Companies

Research undertaken by the University can be commercialised directly, through the creation of a spin-out company to bring a specific new product, service or technology to market.

One of the University's largest spin-outs, Simcyp Ltd, was established in 2001 and now has around 130 employees. Research at the University developed pharmacokinetic tools that enable prediction of drug absorption, distribution, metabolism and excretion, and potential drug-drug interactions. The company was awarded the Queen's Award for Enterprise in Innovation in 2010 and in February 2012 was sold for \$32 million to Certara, a leading provider of drug discovery and development software. The Simcyp population-based simulator is used to streamline drug development by the majority of the world's leading pharmaceutical companies.

In 2018/19 the University of Sheffield had 31 active spin-out companies which collectively employ 460 people across the UK and have a combined turnover of almost £29 million. Five of these spin-outs are based at the University itself including Farapack Polymers, Blastech, Epigenesys, Perlemax and Flashy Science.

Where turnover data was available, this was used to estimate direct GVA by applying sector appropriate turnover to GVA ratios. Where a company had employees but no reported turnover, it was assumed that it was in the early stages of product development and may not yet be generating revenue. The GVA impact of these companies was estimated by multiplying the number of people employed by the average staff costs for the sector the company operates in to give a proxy for GVA.

The relevant multipliers were then applied to estimate indirect and induced employment and GVA impacts. Impacts were attributed by study area based on the location of the spin-outs. 70% of companies were based in Sheffield City Region and the remaining 30% were based elsewhere in the UK. In this way it was estimated that the University of Sheffield's spin-out companies supported £24 million GVA and 590 jobs in Sheffield City Region and £39 million GVA and 980 jobs in the UK.



**Table 5.2 Spin-out Companies Impact**

	Sheffield City Region	UK
GVA(£m)	24	39
Employment	590	980

Source: BiGGAR Economics Analysis



## Case Study 5: Impact and Commercialisation

The University is increasingly focusing its commercialisation on delivering impact, maximising economic and social benefits.

The University of Sheffield has generated a number of successful spin-outs, including in hi-tech sectors such as drug development and engineering. Diurnal, a pharmaceutical spin-out focused on chronic endocrine conditions, raised £30 million when listing on the Alternative Investment Market in 2015, giving a market capitalisation of £75 million.

In 2009, the University signed a 10-year agreement with Fusion IP which gave it exclusive rights to commercialise all of the University's intellectual property, through either licensing or the creation of spin-out companies. As a commercial intellectual property company, the

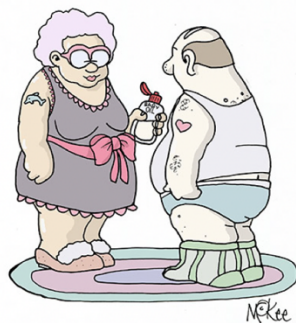


priority for Fusion IP was to identify those opportunities that would generate financial returns, and so this was the focus of commercialisation.

## The University of Sheffield recognises that the returns on its intellectual property are not just financial, but can include wider economic and social returns on investment for the taxpayer

In recent years, the University of Sheffield has changed its approach to commercialising intellectual property, to focus on how to generate the greatest impact, on the economy and society, as well as financial returns. This wider focus on impact as the driver of commercialisation is unusual, if not unique.

This is beginning to generate spin-outs from more parts of the University including, for example, arts and social sciences, as well as the medical and engineering faculties that had previously been the source of most spin-outs. A wider range of business models are also being considered, including social enterprises.



**REDBRICK**  
MOLECULAR

Spin-outs have included the Age of Love social enterprise that tackles stigma surrounding intimate relationships in older age (including using the work of artist Pete McKee). Whilst this venture does not aim to generate financial returns, it delivers wider impacts, increasing the well-being of the older population.

Redbrick Molecular provides novel research materials from academic research for pharmaceutical research. The specialist nature of this business means that there is little prospect of significant growth and financial returns. However, it provides an important part of the national research infrastructure required for discovering and testing new medicines, and so contributes to the UK's competitiveness as a life sciences location.





## 5.3 Knowledge Transfer Partnerships

The University of Sheffield is an academic participant in the Knowledge Transfer Partnership (KTP) programme. The KTP programme recruits graduates to work on joint industry academic projects, in which companies use the research expertise of universities to overcome certain challenges that they are facing. These placements last for approximately three years.

The impact of KTPs has been considered in this study as they provide a strong example of successful collaboration between universities and businesses. The work of the students involved is generally well regarded and many students are retained by the industrial partner once the initial contract has been completed. KTPs are also an important mechanism for supporting academics to engage with businesses and in developing their understanding of industry. KTPs also generate significant positive impacts on business performance. There is detailed research available on the business performance effects of KTPs making it possible to quantify their economic impact.

The economic impact of KTPs stems from the increased productivity the industrial partner achieves from overcoming the issue they were seeking to address. A study by Regeneris Consulting<sup>11</sup> found that in the six years after their completion, each KTP contributed £836,000 GVA to the economy for companies based in Yorkshire and Humber. In addition to this, each of the KTPs supported three jobs throughout the economy. While a KTP is ongoing its economic impact is assumed to be a lot smaller as the benefits of any research will not be realised in the early stages of development.

Analysis of the KTP Online database indicates that the University of Sheffield ranks 30th out of all universities and research institutes in the UK for completed KTPs and 8th for ongoing KTPs. In the last six years the University of Sheffield has completed 65 KTPs and is currently involved with 21 on-going projects. Of the University's completed KTPs, 25% were with partners based in Sheffield City Region and the remaining 75% with partners located elsewhere in the UK.

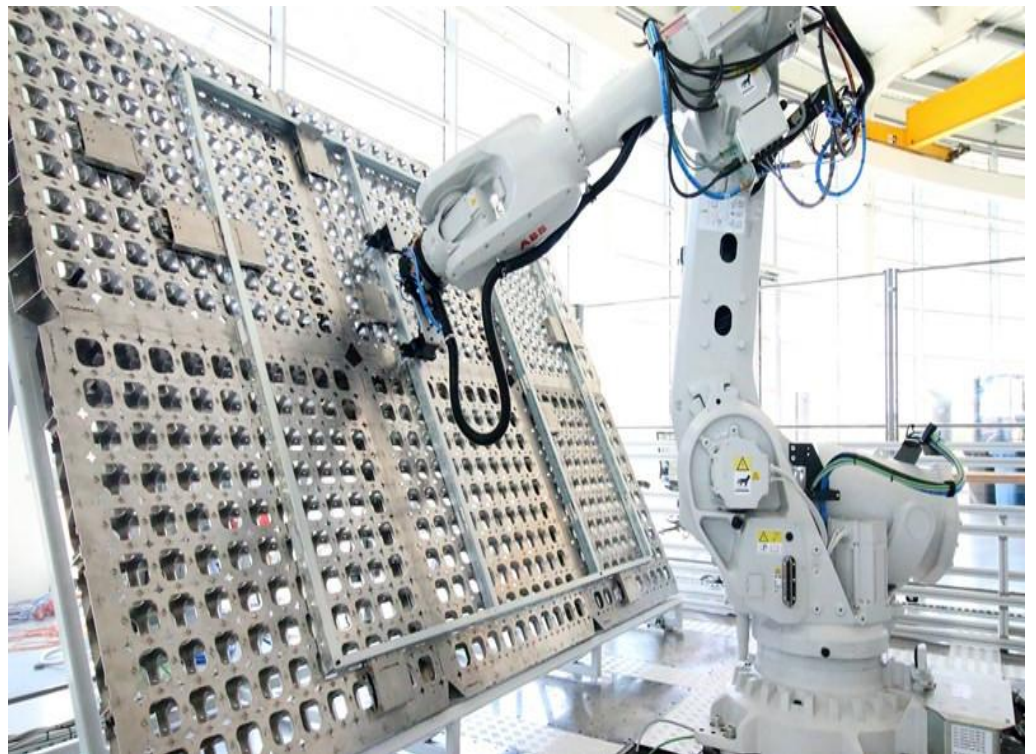
By applying the findings of Regeneris' review to the number of KTPs in each study area, it can be shown that the KTP programme at the University of Sheffield supported £2 million GVA and 50 jobs in Sheffield City Region and £9 million GVA and 220 jobs in the UK.

**Table 5.3 Knowledge Transfer Partnerships Impact**

	Sheffield City Region	UK
GVA(£m)	2	9
Employment	50	220

Source: BiGGAR Economics Analysis

<sup>11</sup> Regeneris Consulting (2010), Knowledge Transfer Partnerships Strategic Review

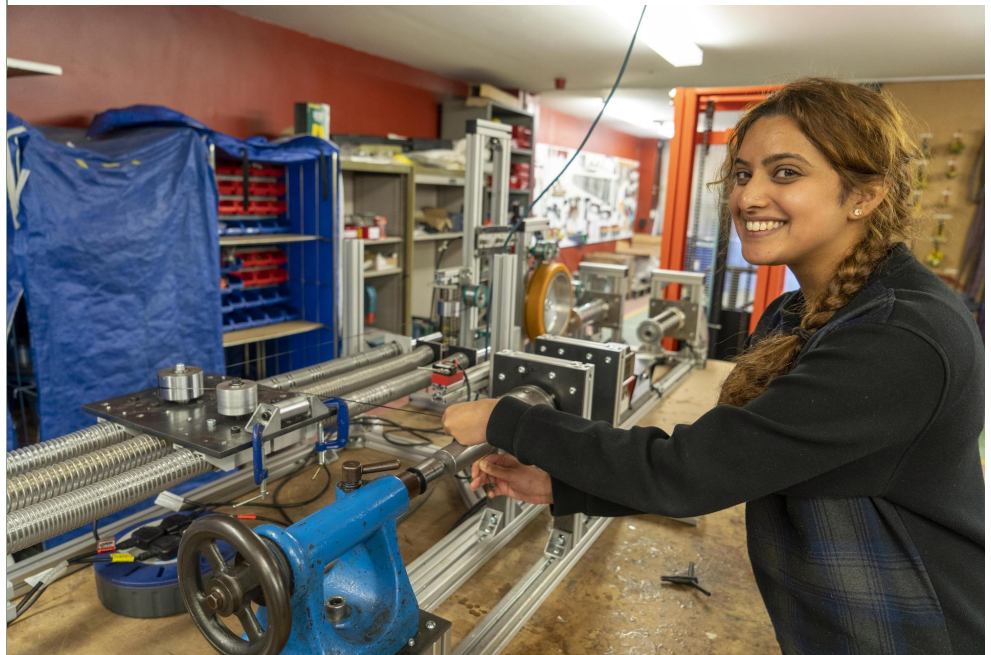


## Case Study 6: Magnomatics

Spin-outs and other businesses, have benefited from maintaining strong links with the University of Sheffield that have enabled them to access talent and improve their technology.

The University of Sheffield is a large institution with many faculties and departments, many of which will have expertise that is relevant to industry. Companies can engage with the University on many levels, from providing student placements to leading significant collaborative research ventures. Many companies that initially engage with the University on smaller projects, such as student placements, realise the benefits that this engagement can bring and go on to have deeper engagement.

Magnomatics, an engineering spin-out of the University and based in Sheffield, is one of the companies that has realised the benefits of engaging with the engineering students of the University. Magnomatics offers summer placements and whole year placements for students towards the end of their degree. The students are able to see how the academic learning they receive at the University can be applied in a commercial environment and Magnomatics is able to access high quality, young engineers that have the potential to fill roles with the company when they leave university.



Magnomatics also engages with the University on research and staff development to improve the skills and outputs of the company. This includes staff undertaking part time PhDs within the University and research projects with the AMRC, that focus on how they can improve efficiency in offshore renewable energy generation.

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### As a result of offering placements to students, Magnomatics has no problems in recruiting talent

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The University also has similar relationships with other SMEs in Sheffield City Region. This includes JRI Orthopaedics, which has engaged on student placements, KTPs and collaborative research projects, and Tinsley Bridge, which has engaged on contract research projects and recruiting graduates.

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## 5.4 Services to Businesses

The University of Sheffield generates economic value by providing services to business. Through collaboration with the University, businesses benefit from the latest research findings and best practice emerging from academia and this can lead to increased productivity and higher profits. A more productive workforce is likely to benefit from higher wages which will support the economy when spent.

This section considers the following services that the University of Sheffield provides to businesses:

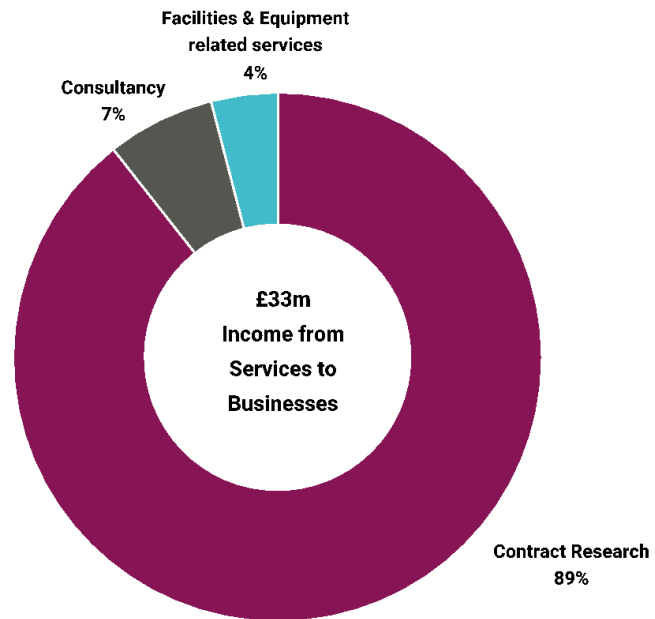
- contract research;
- consultancy;



- facilities and equipment related services; and
- office and laboratory space for businesses to locate.

In 2018/19, the University of Sheffield received £33 million in income from contract research, consultancy and facilities services, with 89% of income arising from contract research agreements with businesses.

**Figure 5-1 Income from Services to Businesses, 2018/19**



Source: Higher Education Business & Community Interaction Survey 2018/19

#### 1.1.1 Route to Impact

Research and development projects paid for by industry can have an impact on the economy in several ways. They can increase the productivity of staff employed by the company, enable the company to offer a new product or service that supports growth, or allow them to improve an existing product or service.

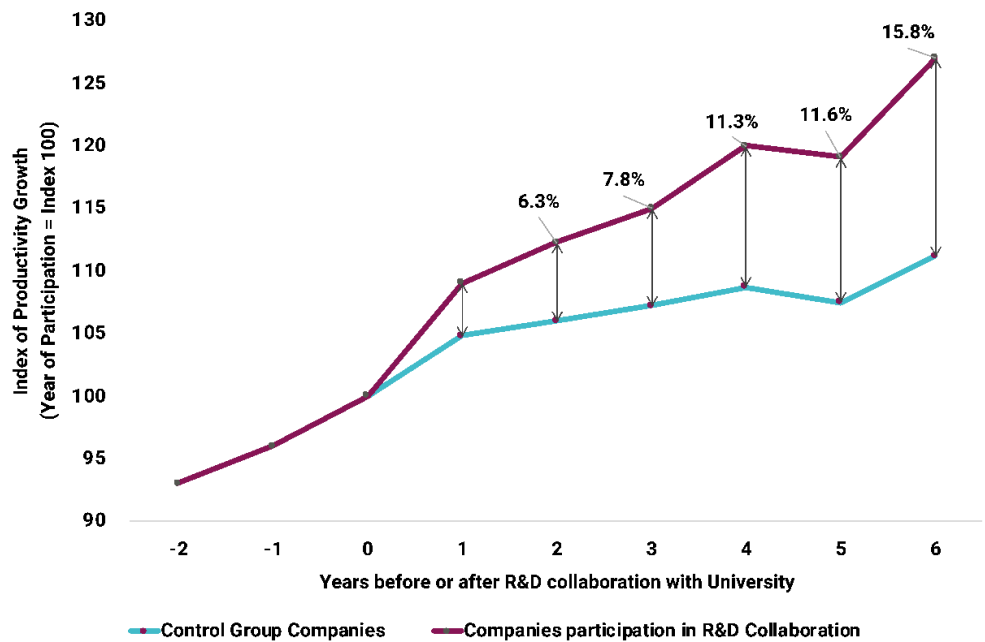
Impacts from an interaction with the University are not realised instantly or even within the first year afterwards. In 2012, Danish consultancy DAMVAD<sup>12</sup> conducted a study on the economic impact of companies collaborating with the University of Copenhagen. The availability of company level economic data for Danish companies enabled them to consider the productivity benefits associated with University collaboration. The results on productivity are provided in Figure 5-2, which shows that impacts are realised gradually and that by year 6, companies that collaborated with universities on research and development projects were 15.8% more productive than equivalent companies who had not.

This study for the University of Sheffield similarly assumes that GVA impacts associated with services to business are realised over a 6-year time period.

<sup>12</sup> DAMVAD (2012), Measuring the Economic Effects of Companies Collaborating with the University of Copenhagen.



Figure 5-2 Timing of Impacts from University interaction on company productivity



Source: Damvad (2012)

The value to an individual business of collaboration with the University will vary considerably between projects, based on the type of work done, the stage in the development process that the project relates to and the capacity of the company to absorb the knowledge and developments that result from the collaboration. However, in order to quantify this impact, it is necessary to estimate what this value would be to a company based on typical returns from these collaborations.

BiGGAR Economics undertook an evaluation of Interface, the agency responsible for brokering relationships between businesses (and other organisations) and universities in Scotland<sup>13</sup>. The connections that Interface has made have covered a range of different types of engagement from small consultancy projects and access to university equipment and facilities through to company sponsored PhDs. The BiGGAR Economics evaluation found that the costs to Interface's clients of participating was £12.9 million and the direct benefit to these organisations was £46.4 million GVA. Therefore, the direct return to investment was 360%. In other words, every £1 invested by businesses generated £3.60 GVA in direct economic benefits.

This finding is similar to conclusions drawn by other studies in comparable areas. A study for the Department of Business, Enterprise & Regulatory Reform<sup>14</sup> considered the impact of Regional Development Agency spending. One aspect considered in this report was the GVA returns to business development and competitiveness interventions between 2002 and 2007. This found that interventions in Science, R&D and innovation infrastructure had achieved cumulative GVA equivalent to 340% of the cost of the projects and that this could increase to 870% if the long-term benefits were considered. This suggests that the

<sup>13</sup> BiGGAR Economics (2013), Evaluation of Interface, the knowledge connection for industry.

<sup>14</sup> PriceWaterhouseCoopers, Impact of RDA spending – National report – Volume 1 – Main Report, March 2009, DBERR.



360% multiplier estimated by BiGGAR Economics could be conservative. The economic impact of the University of Sheffield's services to businesses was estimated using the lowest of the possible multipliers, i.e. 340%.

The GVA impact of business collaboration activities at the University of Sheffield was therefore estimated by multiplying the amount spent by businesses on these services (i.e. the income to the University from this) by the 340% multiplier.

The sectoral and geographic split of the companies that engage with the University were estimated based on data provided by the University. This indicated, for example, that 5% of contract research clients were based in Sheffield City Region and the majority of clients (85%) were based elsewhere in the UK. The remaining 10% of clients were based outside the UK.

#### 5.4.1 Quantifying the Impact of Providing Space for Businesses to Locate

The impact of this activity was quantified separately by considering the number of companies physically located at the University and the number of employees these companies support. In 2018/19 there were eight companies physically located at the University.

Employment data for the eight companies was sourced from publicly available information such as annual accounts or press releases, where possible. In this way it was estimated that these companies have 39 employees altogether. These same sources were used to map companies based on the industrial sector where they operate. The direct GVA impact for each company was then estimated by multiplying the number of employees by the GVA to employee ratio for the company's sector. The indirect and induced GVA and employment impacts were estimated by applying sector appropriate economic multipliers.

Although there are innovation centres and science parks elsewhere in Sheffield, clearly the primary incentive for companies to locate at the University is the potential for collaboration with the University. At a regional and national level, there are more opportunities for businesses to locate elsewhere in the absence of the University, and so the impact cannot be wholly attributed to the University. To reflect this, it was assumed that at the regional level 50% of impact could be attributed to the University and 33% at the national level.

#### 5.4.2 Total Services to Businesses Impact

It was therefore estimated that the services provided to businesses by the University supported £248 million in GVA across the UK over the subsequent six years and supported 630 jobs.

**Table 5.4 Services to Businesses Impact**

	Sheffield City Region	UK
GVA(£m)	11	248
Employment	60	630

Source: BiGGAR Economics Analysis



## 5.5 Student Placements

Student placements are another channel through which the University can engage with and transfer knowledge to the wider business community. These students have an impact on the economy through the contribution that they make to the organisations that they are placed with. They also make a wider impact, providing a route for the university to maintain relationships with host businesses, part of the civic role reviewed in Section 8.

It takes time for a student on placement to begin contributing to the economic output of the company they are placed with and so this study only considered the impact of students who were on placements for longer than 12 weeks.

In 2018/19, there were 370 students of the University who undertook placements for longer than 12 weeks. Most placements were a year in industry for engineering students, while the remainder were either one-year placements in science or part of degrees with employment experience (DEE).

The economic impact of a student on placement is dependent on the GVA they generate. As a result, it was necessary to allocate each of the companies where students were in a placement to an industrial sector based on their SIC codes. Most companies were classified as belonging to the manufacturing (57%) and professional, scientific and technical activities (32%) sectors. 94% of placements were with companies in the UK, of which 11% were based in Sheffield City Region. The University's profile as a world leading research and teaching institution provides students with the opportunity to undertake a diverse range of placements across the UK and globally.

The contribution that students on placement make to the organisations they are placed in is lower than the average output expected by a worker in the sector and would require more time spent training. To reflect this, it was assumed that the GVA of students undertaking a placement is 33% of the GVA generated by a sector's average worker. Economic ratios and multipliers were then applied to estimate the economic impact of student placements.

Although the placement students themselves are not included in the calculated employment impact, by increasing the output of the company they are based in, there will be multiplier effects from their activity further down the supply chain. The majority of the students were paid by their placement provider during their time with them. However, the impacts associated with the expenditure of students has been considered in Section 4.6. Therefore, to avoid double counting this impact, Type 1 Multipliers, which consider supply chain effects only, were used in this analysis.

In this way, it was estimated that the placements undertaken by students of the University of Sheffield in 2018/19 contributed £15 million GVA to the UK economy and supported 220 jobs.

**Table 5.6 Student Placements Impact**

	Sheffield City Region	UK
GVA(£m)	1	15
Employment	20	220

Source: BiGGAR Economics Analysis



## Case Study 7: Social Accountability

The Medical School's pioneering Social Accountability initiative is unique to Sheffield and inspires students to engage with the idea of what it means to be an accountable health professional.

The role of medical professionals is hugely important, not just in the level of treatment that they provide but what and how they choose to treat. The World Health Organisation recognises the importance of this, and the role of medical schools, such as the University of Sheffield. In 1995 the WHO defined social accountability as "the obligation of medical schools to direct their education, research and service activities towards addressing the priorities of those they have the mandate to serve".

The University of Sheffield incorporates social accountability into its medical education. Each year over 200 third-year medical students work with almost 70 charities, organisations and support services across the region. The programme aims to inspire students to engage with the idea of what it means to be accountable health professionals, helping them adopt a commitment to serve in a spirit of social justice within their future practice. It creates opportunities for community partners to contribute to and influence the next generation of health professionals, as well as consistently embed the university within community organisations.





The large variety of local charities that participate in the social accountability programme provide a wide range of experiences and opportunities, including:

- a charity that runs working farms for children and young people with learning or behavioural difficulties that come to learn rural skills and personal development;
- a charity that runs boxing and fitness classes for young people in one of the most deprived neighbourhoods of the UK; and
- a support service for Black, Asian, Minority Ethnic Refugees (BAMER) fleeing any form of violence and abuse.

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## Each year over 200 third-year medical students work with almost 70 charities

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The impact that social accountability will have on the service these medical students will provide in practice goes beyond that which can be quantified in economic terms. However, the wellbeing impacts associated with improved health outcomes, the feeling of empowerment of disenfranchised groups and the improved trust in both health and education organisations will be significant.

## 5.6 Returns to Health and Medical Research

While many of the economic contributions of health and medical research are qualitative in nature, there have been attempts to quantify its impact. Research by the Wellcome Trust on the value of medical research in the UK considers two types of return: health gains (net of



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the health care costs of delivering them) and economic gains<sup>15</sup>. This section considers the value of both.

#### 5.6.1 Quality of Life Impact

The value of health gains was assessed by the Wellcome Trust using the quality adjusted life years (QALY) method<sup>16</sup>. This is a widely used method developed by health economists to assess how many extra months or years of life of a reasonable quality a person might gain as a result of treatment. The Wellcome Trust research considered two areas of medical research expenditure, for cardiovascular disease and mental health.

The value of the health benefit was presented as a return on initial expenditure on the research (IRR). This varies slightly between the two areas of study, and more widely between different scenarios for each of the study areas. The best estimate for the IRR in cardiovascular disease research is 9.2%, although the research also considered high and low expenditure scenarios that ranged from 7.7% and 13.9%. Similarly, the best estimate for the IRR for investment in mental health research was 7.0%. The high and low estimates for this area of study had a slightly broader range and varied between 3.7% and 10.8%.

In order to apply these IRRs to the wide range of medical research undertaken at the University of Sheffield, the average of the two best estimates was used. In this way, it was assumed that every £1 invested in medical research would result in health gains with a value of £0.08 each year in the UK for perpetuity.

Following the approach used by the Wellcome Trust, the Net Present Value (NPV) of medical research was estimated by applying the Treasury approved 3.5% discount rate. In this way, it was estimated that the £32 million income for health and medical research received by the University of Sheffield would have a total impact of around £37 million over the next twenty years across the UK. The impact in Sheffield City Region is assumed to be proportional to the size of its population.

#### 5.6.2 Economic Impact

The Wellcome Trust also considered the effect of medical research expenditure on GDP. It considered the impact this would have in stimulating investment in the private R&D sector and social returns to private investment stimulated by publicly funded medical research. This found that a £1 investment by a public body in medical research and development stimulated an increase in private R&D investment of between £2.20 and £5.10. The Wellcome Trust research also found the social rate of return to private sector R&D funding was approximately 50%.

As with the estimates for the Quality of Life IRR, the research finds that there is a range of estimates for the IRR for GDP impacts. The lowest estimate for IRR is 20% and the highest is 67%. The best estimate given is 30%. Unlike the Quality of Life research, no estimates were given for the GDP impacts associated with mental health research and therefore the 30% estimate is assumed to apply to all types of medical research. Therefore, every £1 invested in medical research results in £0.30 in GDP each year in the UK in perpetuity.

As with the previous calculation, the Net Present Value (NPV) of medical research on GDP was estimated, applying the Treasury discount rate of 3.5%. Over a 20-year period, it was

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<sup>15</sup> Medical Research: What's it worth? Estimating the economic benefits from medical research in the UK, For the Medical Research Council, the Wellcome Trust and the Academy of Medical Sciences, November 2008.

<sup>16</sup> Ibid.



estimated that medical research would result in £138 million across the UK. It was assumed that the economic impact would arise for the most part (75%) within the Sheffield City Region.

### 5.6.3 Total Returns to Health and Medical Research

Adding the social and economic impact of medical research undertaken by the University of Sheffield provides an estimate of the total returns to medical research. Thus, the University was estimated to contribute £104 million to Sheffield City Region and £175 million across the UK through its medical research.

**Table 5.7 Returns to Health and Medical Research Impact**

	Sheffield City Region	UK
GVA(£m)	104	175

Source: BiGGAR Economics Analysis



## Case Study 8: Ticagrelor

Research at the University of Sheffield has contributed to the development of a heart attack drug, Ticagrelor, which has saved thousands of lives.

Individuals who have already had a heart attack are at a higher risk of suffering from additional fatal heart attacks in the future. The University of Sheffield has collaborated with pharmaceutical company AstraZeneca to develop Ticagrelor, a drug that reduces the risk of subsequent fatal heart attacks by 20% in patients who have already had a heart attack.

**Around 20% of patients have another potentially fatal heart attack in the 3 years after their first**

The research at the University of Sheffield was led by Professor Rob Storey in the late 1990s. The focus of the research was to understand and improve the anti-clotting therapy, called cangrelor, which had been developed by AstraZeneca but had to be administered through an intravenous drip, rather than a more practical tablet form. Professor Storey was the first to administer Ticagrelor to a patient, who had been brought to the hospital after having suffered a heart attack the previous day. He was responsible for demonstrating to policy makers and practitioners that Ticagrelor was effective, reliable and safe. This research involved one of the largest clinical trials in the world, involving 18,000 patients in over 40 countries. There were 90 participants in the clinical trial who were from Sheffield.



The results of this clinical trial were significant. Ticagrelor reduced mortality rates in patients from 5% to 4%, equivalent to reducing heart attack deaths by 20%. The results of this clinical trial were used to encourage national health bodies to approve the medicine for treatment of those who had suffered a heart attack. This included the National Institute for Health and Care Excellence (NICE) which approved the use of the drug within the NHS in 2011.

**Ticagrelor was approved by NICE for use in the UK in 2011 and Sheffield City Region was one of the first areas to benefit from this new drug.**

The research of Professor Rob Storey and others at the Thrombosis Research Group has not stopped with the successful development of Ticagrelor. The team is currently looking to understand the reasons why some patients do not respond to Ticagrelor and to develop new treatments that will improve the health outcomes of this group.

## 5.7 Research and Innovation Summary

In 2018/19, through its research and innovation the University of Sheffield generated £143 million GVA and 730 jobs in Sheffield City Region and £742 million GVA and 3,480 jobs across the UK.



**Table 5.8 Summary Research and Innovation Impacts**

	Sheffield City Region	UK
<b>GVA (£m)</b>		
Licensing	<1	256
Spin-outs	24	39
KTPs	2	9
Services to Businesses	11	248
Student Placements	1	15
Medical Research	104	175
<b>Total</b>	<b>143</b>	<b>742</b>
<b>Employment</b>		
Licensing	<10	1,440
Spin-outs	590	980
KTPs	50	220
Services to Businesses	60	630
Student Placements	20	220
<b>Total</b>	<b>730</b>	<b>3,480</b>

Source: BIGGAR Economics Analysis. \*Totals may not sum due to rounding.





## 6.

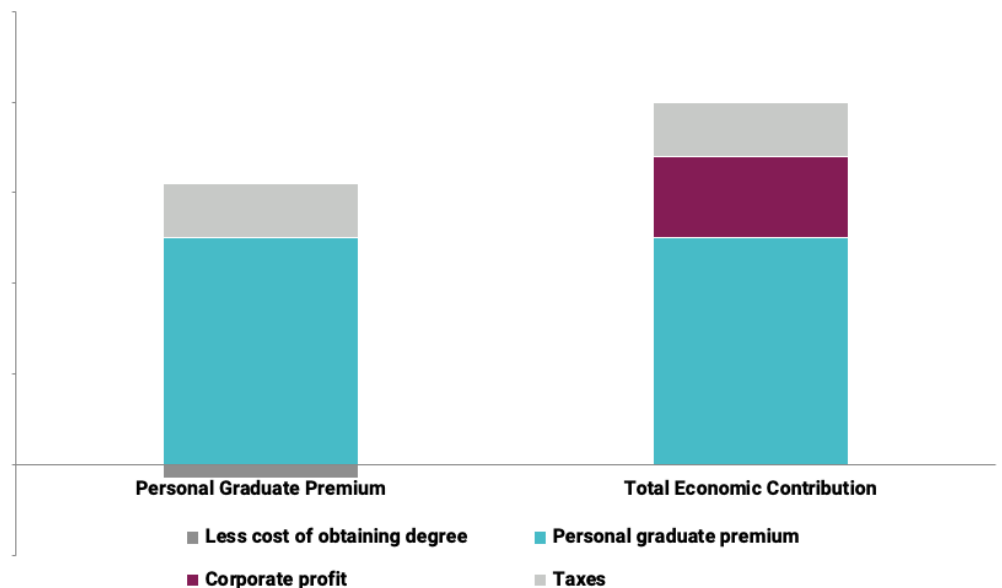
# Education and Training

The education provided by the University enables students to become more productive employees after graduation. The University also helps improve workforce productivity through the training it delivers for companies and individuals.

## 6.1 Graduate Premium

There are two aspects to the contribution that graduates create as a result of having a degree: the personal graduate premium and the total economic contribution. The difference between the two is illustrated in Figure 6-1.

**Figure 6-1 Personal Graduate Premium Vs Total Economic Contribution**



Source: BIS (2013), The Returns to Higher Education Qualifications

By completing their studies at University, graduates acquire skills that make them more productive than they would otherwise have been. The personal graduate premium includes the additional earnings that the graduate can achieve as a result of having their degree, plus the tax contribution that they make, less the costs they incurred in studying which is largely accounted for by student loans.

Graduates are also more likely to be employed than those without a University education. In 2017<sup>17</sup>, the employment rate of graduates in the UK labour market was 82%, compared to 78% for individuals with A Level or equivalent qualifications. Therefore, the decision to go to University not only means that the graduates are more productive when they are employed, but they are also more likely to be in employment than individuals who chose not to go to

<sup>17</sup> ONS (2018) Graduates in the UK Labour Market 2017





university. Although not quantified, the increase in labour market participation is also an economic benefit to the economy.

Beyond this, businesses that employ graduates become more profitable and are able to generate a greater economic impact than they would otherwise have done. The GVA and productivity gains that they realise include the additional profits that employers are able to generate by employing graduates and the additional employment costs they are willing to pay to generate these additional profits. Therefore, the total economic contribution includes the graduate premium plus the additional corporate profits and taxes that they in turn generate.

In this way, the total graduate premium gives the combined personal economic benefit that the year's graduates will obtain rather than the increase in national productivity associated with the degree, which will be higher. Therefore, it is an under-estimate of the total economic impact associated with increased graduate productivity as it does not include the corporate profit associated with each graduate as well as the taxes paid to the Treasury. For these reasons (as illustrated in Figure 6-1) the impact presented in this section is likely to underestimate the full impact that graduates from the University of Sheffield generate for the UK economy.

#### 6.1.1 Graduate Premium by Subject

The graduate premium is a well-researched subject. A comprehensive breakdown of graduate premium by subject is provided in a 2011 study by the Department for Business Innovation and Skills (BIS)<sup>18</sup> which uses data from the UK Labour Force Survey between 1996 and 2009 (Figure 6-2). Despite the data being somewhat dated, evidence from the OECD<sup>19</sup> suggests that the returns from higher education tend to remain constant over time.

The analysis considered the after-tax earnings of a graduate compared to the after-tax earnings of a non-graduate. Direct costs, such as tuition fees less student support, and indirect costs such as foregone earnings were then subtracted from the gross graduate premium for each degree subject to give the net graduate premium.

The research showed that the average premium for achieving a degree amounts to £108,121. However, there is considerable variation on the returns from getting a degree, depending on the subject studied. As a result, the graduate premium ranges from between £380,604 for those studying Medicine and Dentistry, to £16,183 for those studying Creative Arts and Design.

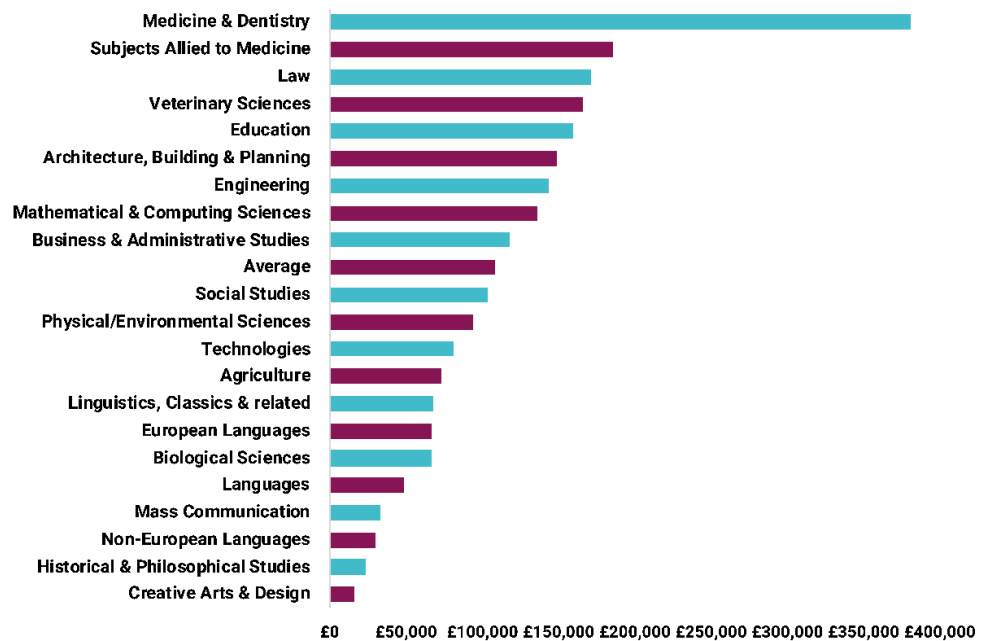
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<sup>18</sup> Department for Business, Innovation and Skills (2011), The Returns to Higher Education Qualifications

<sup>19</sup> Education at a Glance, OECD Indicators series.



**Figure 6-2 Graduate Premium by Subject**



Source: BIS (2011), The Returns to Higher Education Qualifications

### 6.1.2 Calculating the Graduate Premium

In 2016/17, 9,172 students graduated from the University of Sheffield (latest available data at the time of writing). 55% of graduates achieved an undergraduate degree, while the remaining 45% were awarded a postgraduate degree. Among those completing postgraduate studies, 85% completed a taught degree and 15% completed a research postgraduate programme. Engineering and Business & Administrative Studies were the subjects with the highest number of graduates at undergraduate and postgraduate level, respectively.

To estimate the graduate premium, the number of students achieving each degree offered at the University of Sheffield was multiplied by that subject’s graduate premium. It was then necessary to consider where this impact would take place. Analysis of the Destination of Higher Leavers from Higher Education (DLHE) survey responses indicates that around 90% of the University of Sheffield’s UK domiciled graduates remain in the UK after graduation. Of these graduates, around 25% remain in Sheffield City Region. Approximately 23% of the University’s non-UK graduates remain in the UK after graduation and of these, around 9% remain in Sheffield City Region. This was applied to the estimated graduate premium in order to attribute the impact by study area.



**Table 6.1 University of Sheffield, Graduates by Subject Area, 2016/17**

Subject Area	UK	Non-UK
Undergraduate		
Architecture, Building & Planning	124	84
Biological Sciences	636	99
Business & Administrative Studies	183	195
Creative Arts & Design	24	0
Education	26	3
Engineering	500	405
European Languages	65	2
Historical & Philosophical Studies	538	16
Languages	56	1
Law	245	75
Linguistics, Classics & related	260	13
Mass Communication	62	19
Mathematical & Computing Sciences	193	100
Medicine & Dentistry	293	32
Non-European Languages	55	10
Physical/Environmental Sciences	223	63
Social Studies	329	80
Subjects Allied to Medicine	13	5
<b>Total</b>	<b>3,825</b>	<b>1,202</b>
Postgraduate		
Postgraduate Taught	902	2,625
Postgraduate Research	289	329
<b>Total</b>	<b>1,191</b>	<b>2,954</b>

Source: University of Sheffield DLHE (2016-17)

In this way, it was estimated that the total graduate premium of University of Sheffield graduates was £152 million in Sheffield City Region and £523 million in the UK. This impact is a productivity gain measured in terms of GVA and consequently does not have associated employment impacts.

**Table 6.2 Graduate Productivity Impact**

	Sheffield City Region	UK
GVA(£m)	152	523

Source: BiGGAR Economics Analysis



## Case Study 9: Sport Sheffield

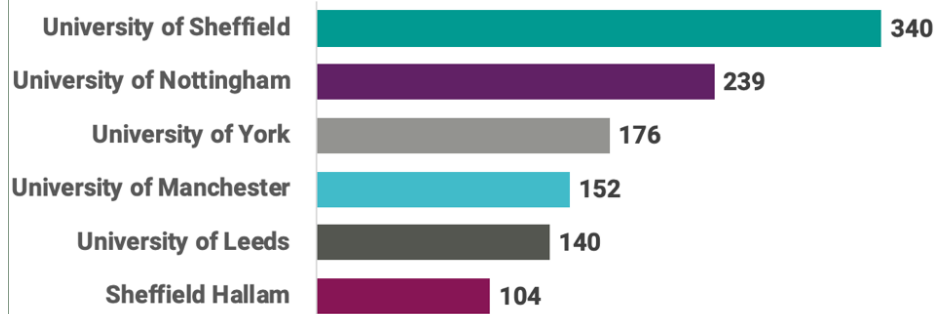
The University has high levels of students in sporting activity through Sport Sheffield, supporting a higher level of student retention.

The University of Sheffield has a strong sports programme, with 340 indoor and outdoor intramural sports teams<sup>20</sup>, one of the highest of any UK university.

<sup>20</sup> The Complete University Guide – University Profiles



### Number of Intramural Teams by University



In addition to the health benefits, participation in club sports is also an important factor in encouraging students to continue to study at University who would otherwise have dropped out. Studies<sup>21</sup> have found that sports club participation creates a social support network within the University that will encourage students to continue their studies and it also enhances the emotional connection to the University. As a result, students who participate in such clubs are less likely to drop out of University than others. Analysis<sup>22</sup> has shown that sports club members are 68% less likely to drop out after first year than average.

The University of Sheffield has a drop-out rate that is less than half of the average for UK universities sector<sup>23</sup> and the evidence suggests that its strong sports club programme contributes to this. This has financial benefits for the University and delivers economic benefits as students become graduates.

## The role of sport in retaining students delivers benefits to the students, the University, the City Region and the economy.

Sport Sheffield also supports the University's wider civic role, including working in collaboration with other sport and leisure parties in the City Region, as part of the Move More initiative. The wider sporting role of the University includes opening up facilities for community access, supporting local sports clubs, student volunteering, preparing joint bids to host sporting events and sharing the outputs from sports related research.

<sup>21</sup> Kampf, S., & Teske, E. J. (2013). Collegiate Recreation Participation and Retention. *Recreational Sports Journal*, 37(2), 85–96.

<sup>22</sup> Brunel University London (2019) Access and Participation Plan 2019-20

<sup>23</sup> HESA (2020), UK Performance Indicators 2018/19, Non-continuation following year of entry



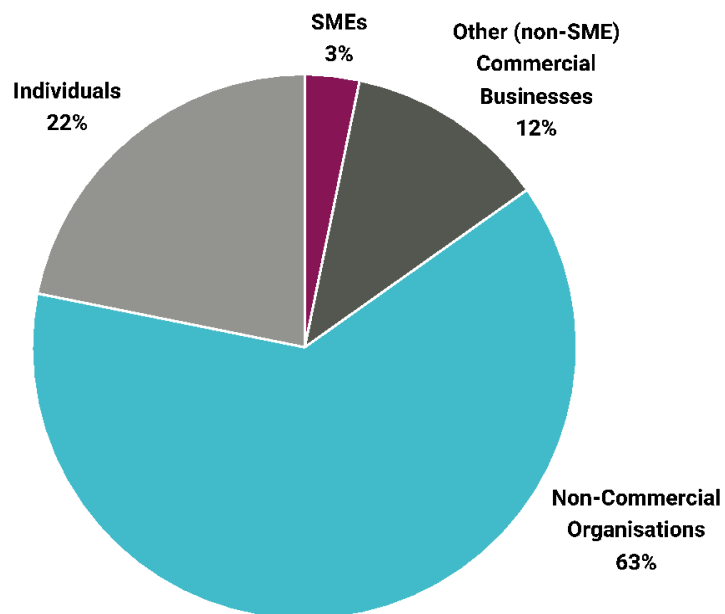
## 6.2 Continuing Professional Development

The University of Sheffield delivers Continuing Professional Development (CPD) which supports skills development for companies and individuals helping to improve workforce productivity.

In 2018/19, CPD courses at the University were attended by around 19,430 people. The majority of CPD courses at the University were delivered by the Department of Biomedical Science, the School of Clinical Dentistry and the School of Health & Related Research.

In 2018/19 the University received £2 million in income from the CPD it delivered, 63% of which was from non-commercial organisations (Figure 6-3). The approach for estimating the impact of this activity is the same as the methodology for the services to businesses impact, which has been described in detail in Section 5.4. In line with this approach, the GVA impact of CPD delivered by the University was estimated by multiplying the University's income from CPD (£2 million) by the 340% multiplier. In order to capture employment impacts, sector appropriate economic ratios and multipliers were applied to this direct GVA.

**Figure 6-3 CPD at the University of Sheffield by Client Type**



Source: University of Sheffield, HE-BCI 2018-19

In this way it was estimated that CPD delivered by the University of Sheffield supported £3 million GVA and 10 jobs in Sheffield City Region and £14 million GVA and 50 jobs in the UK.

**Table 6.3 Continuing Professional Development Impact**

	Sheffield City Region	UK
GVA(£m)	3	14
Employment	10	50

Source: BiGGAR Economics Analysis



## 6.3 Education and Training Summary

The education and training provided by the University of Sheffield supports £154 million GVA and 10 jobs in Sheffield City Region and £537 million GVA and 50 jobs in the UK.

**Table 6.4 Summary Education and Training Impacts**

	Sheffield City Region	UK
GVA (£m)		
Graduate Premium	152	523
CPD	3	14
<b>Total</b>	<b>154</b>	<b>537</b>
Employment		
CPD	10	50
<b>Total</b>	<b>10</b>	<b>50</b>

Source: BiGGAR Economics Analysis. \*Totals may not sum due to rounding.





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## Case Study 10: Apprenticeships

The University of Sheffield makes an important contribution to the skills needs of the Sheffield City Region by developing higher vocational skills.

The University of Sheffield provides a wide range of undergraduate and postgraduate programmes and retains graduates in the City Region economy, where the demand for these skills exists. Unusually for a research-intensive university, it has also taken a broader view of its role in meeting skills needs in Sheffield City Region, including investing in the development of higher vocational skills, including apprenticeships in areas as diverse as manufacturing and nursing.

For manufacturing the AMRC Training Centre delivers higher and advanced apprenticeships, on the same site as the world-renowned AMRC. The teaching is delivered by those who work alongside companies on their research challenges, those same companies who place apprentices in the Training Centre. All of the apprentices are employed, many in the City Region and courses are shaped and designed by an industrial board. Over five years, the AMRC Training Centre has trained more than 1000 apprentices, for more than 300 employers, in the engineering skills they need to grow their businesses and secure a sustainable future.

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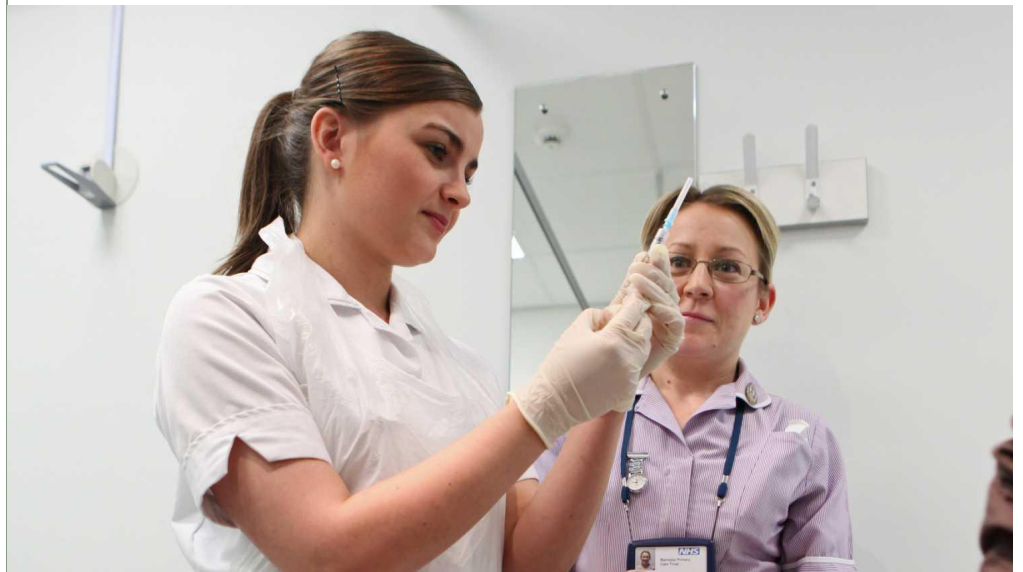
### From nursing to engineering, the University is providing the higher vocational skills that Sheffield City Region needs

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In 2019, the University of Sheffield welcomed its first intake of Nursing Associate Apprentices from across the City Region providing vital support to frontline staff at regional hospitals, nursing homes, doctors' surgeries and hospices.

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This programme, led by the University's School of Nursing and Midwifery, provides 138 apprentices with employer partners Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield Health and Social Care NHS Foundation Trust, Sheffield Children's NHS Foundation Trust, St Luke's Hospice, Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust, Primary Care Doncaster, Cheswold Park Hospital and Rotherham, Doncaster and South Humber NHS Foundation Trust.

These apprenticeship opportunities will ensure that manufacturing and the health and social care sectors in the Sheffield City Region will have the supply of skilled new entrants that they will need and provides people in the City Region with opportunities for vocational education, delivered with associated employment opportunities.





## 7.

# Supporting the Community

The University of Sheffield supports communities across the Sheffield City Region through student volunteering and a wide range of public engagement work. It contributes to the regional tourism sector, with friends and family visiting students and staff and people attending conferences and events held at the University.

## 7.1 Student Volunteering

Students support charities and other third sector organisations across Sheffield City Region by volunteering their time. In doing so, students help community organisations to carry out activities they may not otherwise be able to maintain.

Sheffield Students' Union offers a wide range of volunteering opportunities in the community. Examples include assisting mental health charities, charity helpline volunteers and preparing and serving meals to the homeless. Information provided by Sheffield Students' Union indicates around 2,000 students volunteered approximately 20,000 hours in 2018/19. However, this is likely to be an underestimate as volunteering hours are not always recorded and not all students will undertake volunteering activity through Sheffield Students Union.

A UK-wide study by the National Union of Students (NUS) on student volunteering provides some useful quantification on the extent of volunteering at universities generally throughout the UK. This work suggests that around 31% of students volunteer at some point during their degree and that they volunteer for an average of 44 hours per year based on a 32-week term<sup>24</sup>.

Applying the assumptions from the NUS study to the student population at the University of Sheffield suggests that around 8,050 students volunteer at some point each year during term-time and that this amounts to 354,070 hours of voluntary activities.

ONS data from its Community Life Survey<sup>25</sup> indicates that 1.9 billion hours were volunteered in 2015 in the UK and estimates the value of this volunteering to be equivalent to around £23 billion. This would indicate the economic value of volunteering for an hour is around £12 and this was applied to the number of hours of volunteering estimated at the University. Finally, it was assumed that volunteering activity occurred in the area in which students live.

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<sup>24</sup> NUS (2014), The Student Volunteering Landscape, Key Findings

<sup>25</sup> ONS (2015), Changes in the value and division of unpaid volunteering in the UK: 2000 to 2015, Community Life Survey



**Table 7.1 Student Volunteering Assumptions**

	Value	Source
Proportion of Students that Volunteer	31%	NUS Connect (2014), The Student Volunteering Landscape
Hours spent Volunteering per Year	44	
Average value of volunteering per hour	£12	ONS (2015), Community Life Survey

In this way, it was estimated that students volunteering for the University of Sheffield contributed £4 million GVA to the Sheffield City Region economy.

**Table 7.2 Student Volunteering Impact**

	Sheffield City Region	UK
GVA(£m)	4	4

Source: BiGGAR Economics Analysis

## 7.2 Visiting Friends and Relatives

The University of Sheffield supports the local tourism economy by attracting visitors to Sheffield. Friends and relatives who visit students and staff spend money in the economy and this spending increases turnover in local tourism, retail and hospitality businesses, which in turn supports local employment.

To estimate this impact, it is necessary to estimate the number of visits from friends and relatives (VFR) that students and staff receive. Information on the number of domestic and overseas overnight VFR trips to the Yorkshire and Humber region was sourced from tourism statistics<sup>26</sup> and divided by the population of the area. The number of domestic and overseas VFR trips per person was then multiplied by the number of students and staff at the University to provide an estimate of the number of visits stimulated by the University of Sheffield.

This total number of visits is multiplied by the average spend of tourists on a visiting friends and families trip. Tourism data indicates that on average domestic visitors to Yorkshire and Humber spend £101 per trip<sup>27</sup> whereas overseas visitors spend £430 per trip<sup>28</sup>.

The total visitor spending stimulated by VFR visitors to Sheffield City Region was attributed to the sectors in which tourism spending takes place. The UK Tourism Satellite Account (UKTSA) provides a breakdown of tourism spending by category which was applied to total VFR spending. VAT was deducted from the sectors in which VAT is applied.

Turnover to GVA and turnover per job ratios for each sector were then applied to estimate the direct GVA and employment contribution made by VFR. In addition, induced and indirect effects were estimated by applying the relevant multipliers to the direct employment and GVA impacts.

<sup>26</sup> Kantar (2019), The GB Tourist 2018 Annual Report and ONS (2018), International Passenger Survey

<sup>27</sup> Kantar (2019), The GB Tourist 2018 Annual Report

<sup>28</sup> ONS (2018), International Passenger Survey



In this way, it was estimated that friends and relatives visiting students and staff at the University of Sheffield generated around £1.0 million GVA and supported 30 jobs in Sheffield City Region.

**Table 7.3 Visiting Friends and Relatives Impact**

	Sheffield City Region	UK
GVA(£m)	<1	1
Employment	30	40

Source: BiGGAR Economics Analysis

### 7.3 Conferences and Events

The University of Sheffield has a number of unique, high quality venues which are available to hire for academic, corporate and private events. This includes the Halifax Hall Hotel, a period mansion available to hire for weddings, conferences, receptions and meetings. The Edge is the University's purpose-built conference and accommodation complex which offers flexible event space and can provide accommodation for up to 3,600 guests in summer. Firth Hall, a grade II listed building located in the Edwardian Firth Court, provides a unique setting for weddings, conferences and dinner events. The University also hosts open days for prospective university students, which offers them the opportunity to learn more about life at University. In 2018/19, 31,960 people attended conferences and events at the University of Sheffield.

The conferences, events and open days which take place at the University all attract visitors to the area who may not otherwise have visited and therefore directly benefits the local tourism and retail sectors. However, it is important to consider how much of this activity is additional to each study area (i.e. how much activity would have happened in the absence of the University). For example, academic conferences would have a high additionality because they are taking place in Sheffield City Region due to the presence of the University. However, corporate and private events would have a lower additionality because in the absence of the University they would be likely to take place in other venues in the region. For each event type, this logic has been followed and applied.

It was also necessary to consider the origin of visitors in order to establish their spending profile. A study undertaken by Marketing Sheffield<sup>29</sup>, indicated that around 73% of conference business to Sheffield was from the Yorkshire region and around 3% was international. It was therefore assumed that 73% of attendees would be day visitors, 24% would be domestic overnight business visitors and 3% would be overseas business visitors.

The Marketing Sheffield study also found that around 78% of event business was on a non-staying basis. It was therefore assumed that 78% of attendees to events and meetings at the University were day visitors and the remaining 22% were domestic overnight visitors. As events and meetings tend to be shorter events, less than a day in length, it is assumed that most event business attract primarily domestic visitors.

Visitor spending information was derived from available tourism data. This indicates that domestic overnight business visitors to Sheffield spend £199 per trip and overseas business

<sup>29</sup> Marketing Sheffield (2019), The Impact of Conferences and Meetings in Sheffield in 2018



visitors to Yorkshire and Humber spend £420 per trip. Day visitors to Sheffield have a spend per trip of around £35<sup>30</sup>.

**Table 7.4 Conferences and Events Assumptions**

	Value	Source
Conference visitors	10,200	University of Sheffield
% of day visitors	73%	Marketing Sheffield (2019), The Impact of Conferences and Meetings in Sheffield in 2018
% of domestic overnight visitors	24%	
% of overseas visitors	3%	
Event visitors	21,760	University of Sheffield
% of day visitors	78%	Marketing Sheffield (2019)
% of domestic overnight visitors	22%	
Domestic overnight business visitor trip spend	£199	Kantar (2019), The GB Tourist 2018 Annual Report
Overseas business visitor trip spend	£420	VisitBritain (2019), International Passenger Survey 2018
Day visitor trip spend	£35	Kantar (2019), The Great Britain Day Visitor 2018 Annual Report

The total visitor spending stimulated by conference and event visitors to Sheffield was attributed to the sectors in which tourism spending takes place based on the data in the UK Tourism Satellite Accounts. VAT was deducted from the sectors in which VAT is applied and spending on accommodation was deducted to avoid double counting.

Turnover to GVA and turnover per job ratios for each sector were then applied to estimate the direct GVA and employment contribution made by conference and event visitors. Induced and indirect effects were estimated by applying the relevant multipliers to the direct employment and GVA impacts.

The University's buildings also provide a unique venue for weddings. Information provided by the University indicates that in 2018/19 almost 60 weddings with 4,280 attendees took place.

It was assumed that around 50% of wedding guests were from outside Sheffield and could therefore be expected to stay overnight in the local area. It is likely that some of these guests stayed in accommodation owned by the University so in order to avoid double counting the expenditure of these guests (assumed to be around 20% of total guests) was excluded from the analysis. The expenditure of the remaining guests was estimated by multiplying the number of visitors from outside Sheffield by the average expenditure for overnight leisure visitors to Sheffield.

In addition to the expenditure of wedding guests, the weddings hosted at the University of Sheffield also generate economic activity as a result of expenditure by the hosts on items

<sup>30</sup> Kantar (2019), The Great Britain Day Visitor 2018 Annual Report



such as flowers, cake, transport, photography and entertainment. It was assumed that between 20% and 50% of expenditure on these items is retained within the local area.

A guide published by Bridebook<sup>31</sup> suggests that typical expenditure on these items amounts to around £4,300. By applying this to the number of weddings hosted at the University each year it was possible to estimate this expenditure generated almost £108,700 of additional business for local businesses in 2018/19.

Taken together, conferences, events and weddings held at the University of Sheffield support £1.0 million GVA and support 30 jobs in Sheffield City Region.

**Table 7.5 Conferences and Events Impact**

	Sheffield City Region	UK
GVA(£m)	<1	1
Employment	20	30

Source: BiGGAR Economics Analysis

## 7.4 Public Engagement

In 2018/19, 528,400<sup>32</sup> people participated in a range of free and charged for events organised by the University of Sheffield. 20% of attendees were to public lectures and 4% to performance arts events and exhibitions. The majority of attendees (76%) were to other types of events such as schools workshops and activities, panel discussions, symposiums, film screenings and book launches to name a few.

These events allow the University to engage with a variety of segments of the local community in a number of different ways. The number of people attending would suggest that the events are quite successful, well received and valued by the local community.

One way of estimating the impact of these types of events is to consider the time staff spend preparing and delivering them. In 2018/19, staff at the University spent a total of 1,126 days<sup>33</sup> preparing and delivering public engagement events. To value the time spent delivering public engagement activity, an average staff day rate of £500 can be applied to the number of days spent preparing and delivering events, giving a total value of £563,000.

The University's students also engage with the local community in a variety of ways. FreeLaw is a student-led legal clinic which provides legal advice to members of the public as well as charitable organisations and small businesses. The advice provided is overseen by qualified solicitors who are also faculty members at the School of Law.

Quantifying the value of this type of activity is generally challenging due to a lack of available data on the monetary value of outputs. However, information is available for one of the University's student led community projects. The University's Architecture Masters students provide consultancy for local organisations (as discussed in more detail in the Case Study 13: Live Projects and Live Works). They undertake 15 projects a year with the value of the consultancy they provide equivalent to £25,000 per project. This would suggest a total value

<sup>31</sup> Bridebook, The UK Wedding Report 2018

<sup>32</sup> Higher Education Business & Community Interaction Survey 2018/19

<sup>33</sup> Ibid.



of £375,000 for the community engagement work that the University's Architecture students undertake. This is just one quantifiable example illustrating how the University's students generate impact through their public engagement.

In total therefore, the public engagement activity of the University is estimated to have a value of just under £1 million. As this impact is a productivity gain measured in terms of GVA, there will not be associated employment gains.

**Table 7.6 Public Engagement Impact**

	Sheffield City Region	UK
GVA(£m)	<1	<1

Source: BiGGAR Economics Analysis



## Case Study 11: Supporting Cancer Charities Through Drama

Research at the University has the greatest impact when it is communicated to and adopted by practitioners in the relevant sectors.

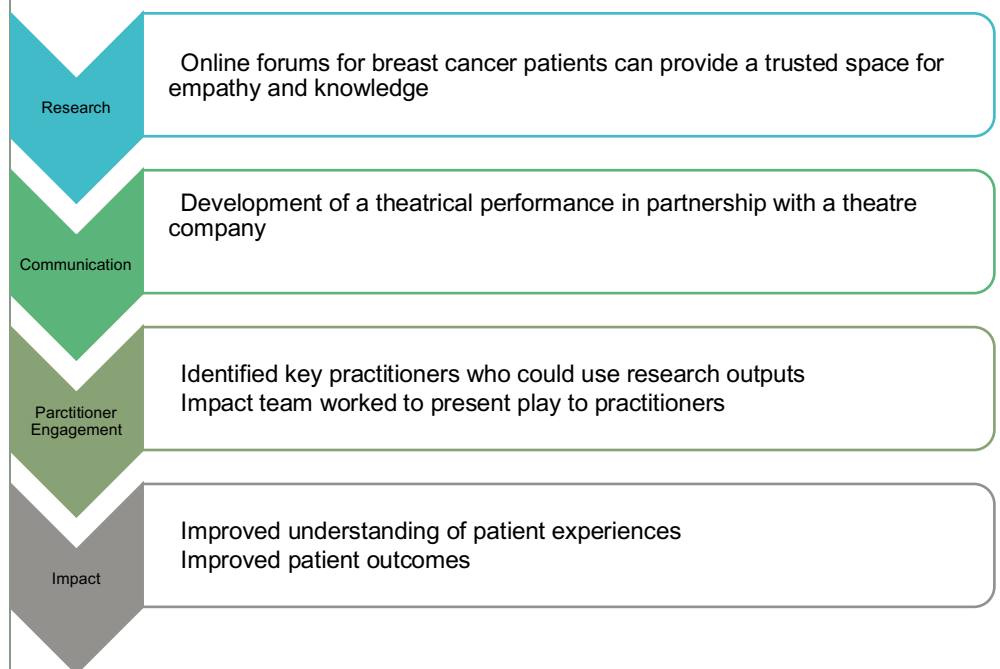
Communicating qualitative social science research can be challenging. The Space for Sharing Study team is researching how people communicate online during extreme circumstances. Part of this included a qualitative analysis of online sharing by breast cancer patients



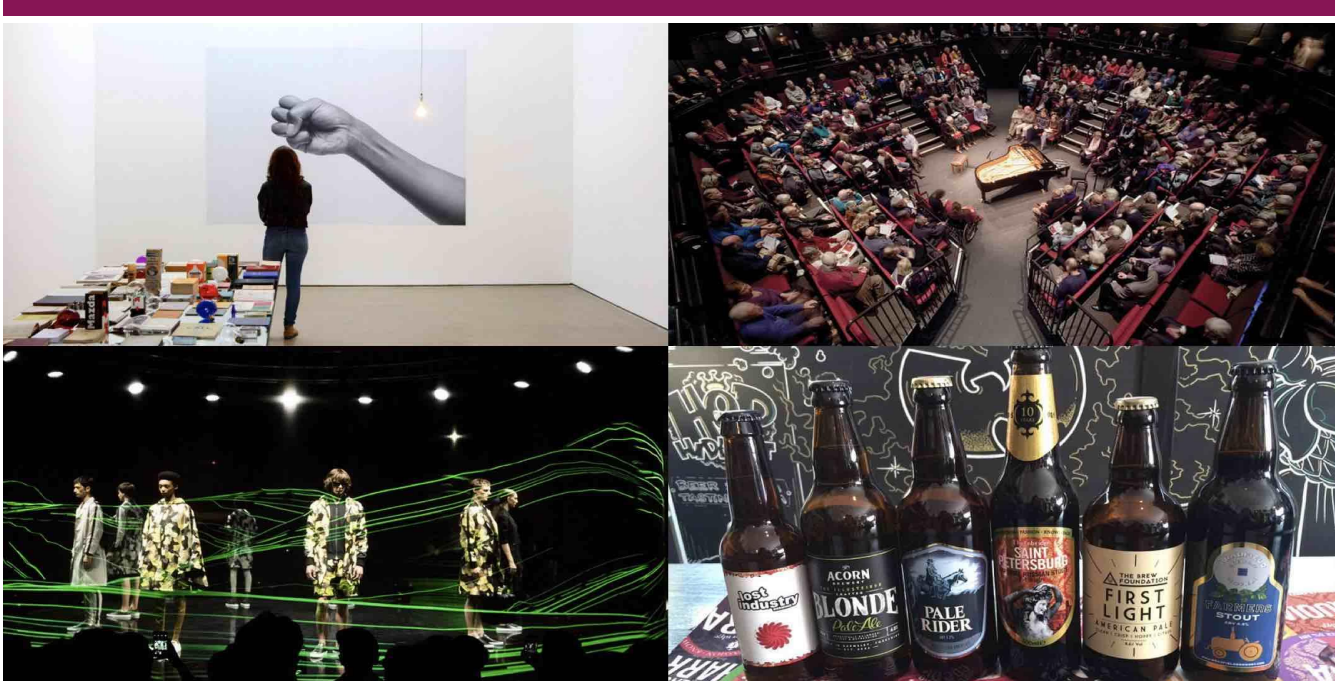


through web forums and social media and the role this communication had in supporting them through their illness. This study found that online forums can play a positive role for patients by being a trusted source of empathy and knowledge.

The researchers, working with theatre company Dead Earnest, developed a novel theatrical play to communicate the findings of their study. The play tells the story of the online experiences of breast cancer sufferers and this captures the emotional element of their research in a way that would not be possible to convey in an academic journal. The Impact Team at the University of Sheffield brought this play to a wide and relevant audience by focusing on the practitioners who would be best placed to apply the findings of the research to their own practices and improve patient outcomes.



The play was put on to members of the public and to representatives of large cancer charities, whose workers directly support cancer patients. The charity Breast Cancer Now decided to put on the play at their next conference to reach as many practitioners as possible and maximise the impact of this research.



## Case Study 12: Cultural Vibrancy of Sheffield

The University of Sheffield's work on enhancing the cultural vibrancy of the City of Sheffield, improves the quality of life for all in Sheffield City Region.

The prominence given to culture in the University of Sheffield's own structure, with a dedicated team led by the Director of City and Culture, is striking and unusual for a University. Cultural vibrancy is part of the University's commitment to delivering wider benefits for the city of Sheffield and Sheffield City Region.

A key piece of work for the University's cultural vibrancy work and for the vision for the cultural sector in Sheffield was gathering evidence on the talent that existed in the city and identifying what makes the place distinctive from other cities. Five reports were commissioned to demonstrate talent pools in the areas of:

- Music: Sheffield is a leading Music City with 788 organisations active in the music sector, 465 active bands, 65 recording venues and 69 performance venues;
- Classical Music: Sheffield has a thriving and vibrant classical music sector, with 423 events in 30 venues, selling 146,250 tickets, in a single year;
- Art: Sheffield has a lively arts scene thanks to affordable living and studio space, and the "mental and physical space to think and act";
- Beer: Sheffield can claim to be the birthplace of the UK craft beer revolution, with 57 breweries; and



- Creative Digital: over 21,000 people are employed in digital industries across Sheffield City Region.

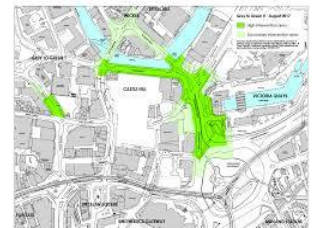
The strategy has been distinctive from that followed by many other cities. It has never been the intention to be simply a location or venue for cultural events that attract tourists. Rather it has been more ambitious, to transform Sheffield into a magnet city, increasing vibrancy to retain spending power and talent in the city, a more attractive place to live, work, study and play.

## Transforming Sheffield into a magnet city has been based on the city's unique selling points: art, music, beer and creative digital

The University has worked in the city and nationally on a wide range of cultural boards, statutory bodies and committees, to bring the cultural and creative sector together. Whilst universities commonly provide venues and sponsor cultural events, the University of Sheffield goes further, as co-producers and co-creators of activities. This includes supporting city-wide events such as DocFest (documentary festival), Tramlines (annual music festival) and BBC Music Day. The University also provides a regional platform for national engagement events such as the Festival of Social Sciences, Pint of Science and the Medical Research Council Festival. Other major events which are brought to Sheffield by the University include Off the Shelf, one of the largest literary festivals in the UK, and Festival of the Mind, a biannual event where cultural partners in the city join with academics to showcase research.

The University has also been a leading partner working with others across the city to support cultural development alongside the development of place.

Notable projects include Foodhall, a vibrant community centre and communal dining and events space set up by students in 2016 and ReNew Sheffield, which secures 'meanwhile uses' for vacant and derelict land. A further example is the Grey to Green linear park which replaces a city dual carriageway, reducing flooding risk and creating an inner city green wildlife corridor.



Whilst there are obvious benefits to the University of Sheffield such as attracting and retaining staff and students, the University's city and culture work has been based on recognising that the cultural and creative industries are key sectors, and necessary for a competitive and sustainable Sheffield City Region economy which is also an attractive place to live and work.



## Case Study 13: Live Projects and Live Works

Supporting community led regeneration in Sheffield.

The University of Sheffield's School of Architecture (SSoA) runs two interrelated projects that have a tangible impact across Sheffield City Region. Masters architecture students work in Live Project groups to provide architectural consultancy to local community groups, charities, health organisations and regional authorities. Since 1999, 2,000 Masters students have delivered 220 projects in 16 countries, including 148 projects in Sheffield.

**Live Works supports community-led regeneration of the city's buildings, streets and neighbourhoods, combining teaching, research, graduate employment and public engagement.**

Live Works is SSoA's urban room in Sheffield city centre and is part of the civic university strategy and ReNew Sheffield, which encourages meanwhile uses in improving the vibrancy of areas in transition and helping businesses to grow. Live Works initiatives often develop from Live Projects and together they integrate student work and research projects so that community partners build capacity, gain knowledge, access funding and realise new projects.



For example, the Doncaster Toolkit is an educational resource aimed at inspiring young people in Doncaster to engage with their built environment and be actively involved in the town's development. It was developed and produced by Live Works in collaboration with Doncaster Civic Trust. Starting out as a Live Project, the prototype was designed by postgraduate students. It has since been produced and distributed in over 190 schools in Doncaster and is being integrated in the curriculum as a tool to teach local studies and architecture.

There are three types of benefit from Live Projects and Live Works.

Firstly, clients use the in-kind contributions of Live Projects. Each project involves 15 Masters students, who have considerable professional experience, working 0.8 FTE for six weeks, £25,000 worth of consultancy per project. Several clients factor this into funding applications as in-kind support, allowing them to leverage additional investment in projects.

Secondly, Live Projects and Works produce strategies and designs for community partners so they can access funding for capital projects. They help clients scope out the viability of a project, develop the brief and build capacity to commission building work. Several projects have raised hundreds of thousands of pounds. These include Harmony Works, raising £250,000 towards the remodelling of an empty historic building in Sheffield as a music education and performance venue.



Finally, SSoA works with community partners to access research funding from UKRI and elsewhere, helping to build capacity and resilience. Bringing together researchers from across the University and adding value through expertise in creative community engagement, there are several examples of impact. These include Experience Castlegate, a cross sectoral partnership producing an augmented reality experience of Sheffield Castle, showcased at the Festival of the Mind.

## 7.5 Overseas Students in Sheffield

The University of Sheffield attracts students from all over the world. Around 27% of the University's full-time students are non-EU students compared to an average of 16% across all UK universities. The proportion of non-EU students at the University of Sheffield is therefore significantly higher than the average observed for all UK universities. Overseas



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students bring diversity to the University campus as well as to Sheffield City Region itself. They also make an economic impact in the City Region in a number of ways.

The tuition fees paid by non-EU students support the direct income of the University which helps the University to maintain its presence and continue to be a major employer in Sheffield. In 2018/19, the University of Sheffield received £149 million in tuition fees from non-EU students, equating to 22% of the University's total income. The core impacts of the University are driven by the income of the University, therefore the core impacts of the University associated with non-EU students could be said to be equivalent to 22% of the University's direct, supplier, staff spending and capital spending impact. This would equate to £121 million GVA and 2,230 jobs in Sheffield City Region.

The expenditure of non-EU students such as on food, personal items, and transport, supports local businesses. The average GVA supported per student from student expenditure was applied to the number of non-EU students at the University. In this way it was estimated that non-EU students support £36 million GVA and 800 jobs in Sheffield City Region through their spending.

Overseas students are also more likely to receive international visitors from family and friends abroad. These visitors support the tourism economy in Sheffield through spending which is significantly higher than the spending of domestic visitors. As discussed in Section 7.2, on average domestic visitors to Yorkshire and Humber spend £101 per trip whereas overseas visitors spend £430 per trip. It was assumed that each international student at the University would receive one overseas visitor each year. On this basis it was estimated that VFR visits to international students supports just under £1 million GVA and 30 jobs in Sheffield City Region.

As discussed in Section 6.1.2, upon graduation around 23% of graduates from outside the UK remain in the UK and continue to make a positive contribution through the graduate earnings premium they earn. Those that remain in Sheffield City Region support the long-term growth of the economy in the area. Non-EU students make up 91% of the University's graduates from outside the UK. On this basis, it was estimated that overseas students support a graduate premium of £26 million in Sheffield City Region.

Overseas students at the University of Sheffield support £184 million GVA and 3,060 jobs in Sheffield City Region and £326 million GVA and 5,260 jobs in the UK. The impact of international students has been included within all of the impacts discussed so far but has been separated out in this section to highlight their impact.



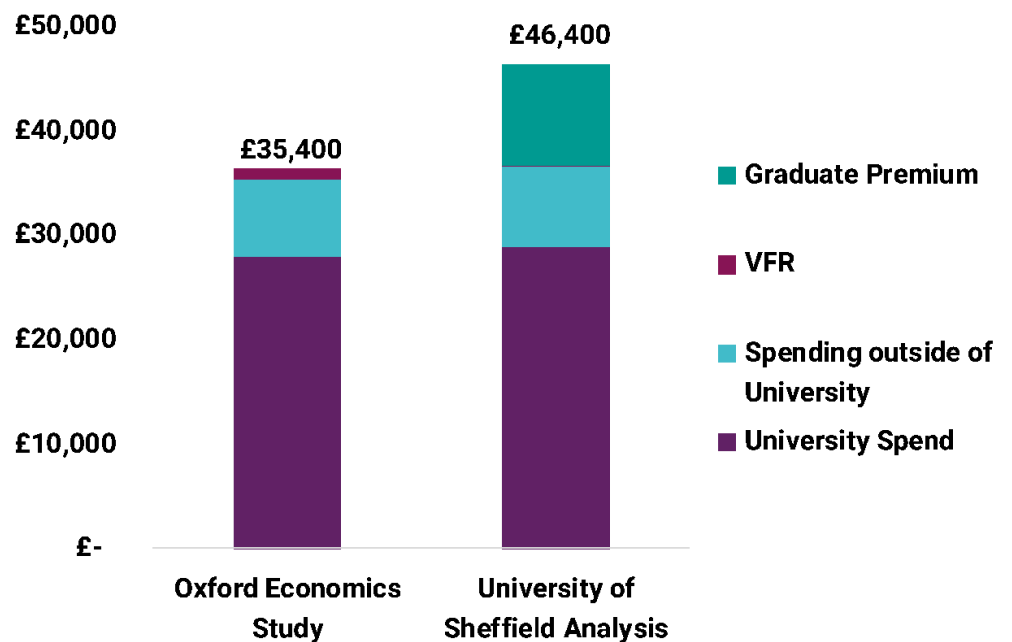
**Table 7.7 Overseas Students Impact**

	Sheffield City Region	UK
GVA (£m)		
Tuition Fees	121	203
Student Spending	36	54
VFR	1	1
Graduate Premium	26	67
<b>Total</b>	<b>184</b>	<b>326</b>
Employment		
Tuition Fees	2,230	3,990
Student Spending	800	1,230
VFR	30	40
<b>Total</b>	<b>3,060</b>	<b>5,260</b>

Source: BiGGAR Economics Analysis. \*Totals may not sum due to rounding.

This impact is equivalent to £46,400 GVA per non-EU student per year to the UK economy. This figure is greater than similar analysis undertaken by Oxford Economics<sup>34</sup> because the impact of graduate earnings of those international students who stay in the UK is included in this study.

**Figure 7-1 UK GVA Impact per Non-EU student, Comparison with other studies**



Source: BiGGAR Economics Analysis and Oxford Economics (2017), The Economic Impact of International Students

<sup>34</sup> Oxford Economics (2017) The Economic Impact of International Students



The benefits of the overseas students on campus cannot all be captured in economic impact terms. There are wider economic and social benefits. These include benefits to businesses engaging with the University. Examples include students helping local businesses wishing to export to understand cultural practices in their target markets and so, if necessary, adapt their products or marketing strategies appropriately.

The Students' Union actively supports all students, including those from overseas, so that they benefit from the full range of activities available, including volunteering opportunities. This can generate unexpected social benefits. Two Chinese students who volunteered with local care provider Sheffcare found that one of the residents was an elderly Chinese man with limited English language ability. The two volunteers had a transformational impact on his care experience, from having social interactions with him in his native language to providing translation services within the care home and on hospital visits.

## 7.6 Supporting the Community Summary

The University of Sheffield supports the local community through its students volunteering activities and the public engagement work of the University. The University also supports the local tourism sector through family and friends visiting staff and students and conferences, events and weddings held at the University. In 2018/19, this was estimated to contribute £6 million GVA and 50 jobs in Sheffield City Region and £7 million GVA and 80 jobs in the UK.

**Table 7.8 Summary Supporting the Community Impacts**

	Sheffield City Region	UK
<b>GVA (£m)</b>		
Student Volunteering	4	4
VFR	<1	1
Conferences & Events	<1	1
Public Engagement	<1	<1
<b>Total</b>	<b>6</b>	<b>7</b>
<b>Employment</b>		
VFR	30	40
Conferences & Events	20	30
<b>Total</b>	<b>50</b>	<b>80</b>

Source: BiGGAR Economics Analysis. \*Totals may not sum due to rounding.







## 8.

# A Civic University

The University of Sheffield contributes to the economic, social, environmental, and cultural life of Sheffield City Region.

Universities have a huge role to play in the economic, social, cultural and environmental well-being of the places in which they are rooted. It is widely recognised that the civic role of universities is vital to securing a successful future for cities, towns and communities. This was a key conclusion of the UPP Foundation's Civic University Commission<sup>35</sup> and we have seen a wider shift towards an understanding of place-based effects in policy making, most notably through the industrial strategy, city deals and devolution negotiations.

There is an increasing focus on the civic role of universities across the UK, however not all universities can deliver this. To be a truly civic institution, a focussed and deliberate strategy is required, one with strands running through all the university's activities. The University of Sheffield has a carefully choreographed approach to civic and partnership work and can track its journey of regional engagement over decades.

## 8.1 More than an Anchor Institution

In the context of widening inequalities and low growth, universities working alongside local authorities and the health sector are important anchor institutions, making a huge impact on the well-being of people and places. The impact of Covid-19 will make this role even more important in the months and years to come.

There is widespread acknowledgment of the power of anchor institutions as drivers of economic development, changing the fortunes of places in which they are located. Urban anchors are typically universities and hospitals. Section 4, above, sets out the scale of the anchoring impact of the University of Sheffield, which contributed £759 million GVA and almost 16,000 jobs in Sheffield City Region in 2018/19. Working together with local authorities and other civic actors anchors like this have the potential to bring benefits to the communities in which they are based, improving the quality of life for residents and contributing to inclusive and sustainable economic growth.

In February 2019, the University of Sheffield was one of just 30 institutions to sign a pledge to their local communities, committing to produce a "Civic University Agreement" in partnership with local government and other major institutions in their area. In signing this agreement, the University of Sheffield committed to:

- attaching a high priority to the economic, social, environmental, and cultural life of the Sheffield City Region;
- informing its civic role by an evidence-based analysis of the needs of Sheffield City Region, developed collaboratively with local partners and informed by the voice of the local community; and

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<sup>35</sup> UPP Foundation Civic University Commission is an independent inquiry into the future of the civic university, <https://upp-foundation.org/civic-university-commission/>



- collaborating with other universities and anchor institutions and forming partnerships that help to overcome the challenges facing its local communities.

Recognising that partnership and regional engagement is an important part of the University's core mission, the Partnerships and Regional Engagement team was established in 2017, building on decades of engagement work throughout the University. The team fosters relationships with partners and co-ordinates activity to ensure the University meets local need with a unified and joined-up response. Many examples described throughout this report provide evidence of the success of the University in delivering collaboration for the social, environmental and cultural benefit of Sheffield City Region.

The regional engagement work programme of the University is described in the sections that follow. There are four focussed themes: sustainable development, innovation; health and care; and cultural vibrancy. These are supported by a set of four cross cutting enablers: enhancing the physical environment, raising attainment levels in the region; supporting social inclusion; and acting as a role model employer, procurer, broker and trusted civic partner.

## 8.2 Regional Engagement Themes

### 1.1.2 Sustainable Development

The quantitative economic analysis presented in this report points to a strong economic contribution of the University of Sheffield, playing an important role in the economic growth of the City Region. However, the old economic paradigm of judging success based on economic growth alone has been surpassed, with a new understanding of the benefits of inclusive and sustainable growth beginning to drive government and organisations to make a real difference in the world.

The University of Sheffield understands this, and is developing Sustainability Strategy, to be published alongside the University's Vision, focussed on responding to the global climate emergency and committing the University to deliver sustainable development. It reflects the UN's Sustainable Development Goals and the Paris Agreement on Climate Change.

This strategic approach is apparent in all areas of the University's activities – teaching, research, and core operations. There is a plethora of operational examples, from the University's long-standing investment in sustainable travel, to research to develop sustainable aviation fuel, to delivering a more sustainable campus, to buying from local suppliers. Case studies for these initiatives from different areas of the University's core functions are highlighted throughout this report.

The implementation of this strategy plays a role in ensuring the economic growth evidenced throughout this report is delivered in an increasingly sustainable fashion.

### 1.1.3 Innovation

The University of Sheffield creates innovation-led opportunities for the region across a wide range of industries, a highlight being advanced manufacturing, presented as a case study in this report. It also offers strategic leadership, working in partnership with the region's other anchor institutions helping drive their combined innovation benefits.

There are concrete impacts of this joint work. For example, the University's AMRC and regional partners have attracted investment from both Boeing and McLaren, which have sited new production facilities here. As well as the obvious innovation outcomes, this is



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creating a range of economic development benefits for the region, including opportunities for local people to secure good jobs and providing apprenticeships and other skills development opportunities.

Three new translational research centres were opened in 2018, located beside the AMRC's Factory 2050. The Royce Translational Centre, the Laboratory for Verification and Validation (LVV) and the Integrated Civil and Infrastructure Research Centre (ICAIR) allow businesses to access university research expertise and use industrial digital technologies to transform industrial applications. A fourth Translational Research Centre is in development, focused on energy. There are proven impacts of facilities like this that provide access to research, technology and facilities to businesses – they reduce barriers, de-risk innovation and properly drive business development.

Other initiatives to reduce barriers have been developed in partnership. One such barrier is the confusing landscape of business support that SMEs face. To address this, the University of Sheffield formed a partnership with Sheffield Hallam University to jointly market innovation support through the Sheffield Innovation Programme, offering a single front door to services from either university. The two universities also jointly host the Managing Directors' Club, an innovation focused network for businesses across the region. Such networks are another proven route for supporting business innovation and growth. Events covering a range of topics typically draw attendances of around 100 people. With contemporary and current content, most recently the MD Club is signposting support for businesses over Covid-19.

#### 1.1.4 Health and Care

The University of Sheffield is integral to the City Region's health service, from training nurses to delivering cutting edge medical research and co-creation with patient groups. Its work with NHS professionals and patients and with other partners all help create a cycle of improvement in the region's health and care systems.

The University is a founding member of the Health and Care partnership which brings together the core academic base across the two city universities in partnership with the Sheffield Teaching Hospitals NHS Foundation Trust. This has created a strong collective position on health research and workforce training and development.

Several initiatives support strong relationships between the University, communities and health services, all contributing to its civic role in the health arena. Three examples are outlined here.

Firstly, students train and deliver care within the NHS across the region. More than 700 students are on clinical placements at any one time within the around 80 GP practices and in the region's hospitals (Sheffield Teaching Hospitals Trust, Sheffield Children's Hospital and Sheffield Health & Social Care, Barnsley, Rotherham, Doncaster/Bassetlaw, Chesterfield). They provide more than 23,000 weeks of clinical placement activity per year. While our economic model accounts for the quantitative economic impact of these placements, there are of course wider benefits from supporting the health and care sector, its workforce, and the well-being of the people cared for by students. The University also employs clinical academic staff who work across both the University and the teaching hospitals.

The Medical School's pioneering Social Accountability initiative is unique to Sheffield and gives medical students the opportunity to volunteer in local communities across the region. Each year over 200 third-year medical students work with almost 70 charities, organisations



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and support services across the region. The programme aims to inspire students to engage with the idea of what it means to be accountable health professionals, helping them adopt a commitment to serve in a spirit of social justice within their future practice. It creates opportunities for community partners to contribute to and influence the next generation of health professionals, as well as consistently embed the university within community organisations.

Finally, the University's Patients as Educators programme provides students with the opportunity to meet and learn from patients. The programme is internationally recognised as the largest of its kind, with more than 800 patients, simulated patients and volunteers involved in the training of undergraduate and postgraduate healthcare professionals.

#### 1.1.5 Cultural Vibrancy

The wider impact of the University of Sheffield on the cultural life of the region can help to deliver economic impacts, for example by supporting the cultural and creative industries. However, the impact on well-being and the lives of local people is equally important and is a fundamental part of the role of the Civic University.

The University of Sheffield has focussed on the cultural vibrancy of the region, by creating platforms for culture and also creating the physical urban environment that supports it, reviewed below. The University's City and Cultural Vibrancy team delivers a wide variety of initiatives and public engagement activity, including national festivals with international importance (such as Being Human, and the Festival of Science) as well as city-led festivals like Migration Matters and SheFest.

The team produces the University's showcase engagement festival, Festival of the Mind, held every two years. The third Festival of the Mind (September 2018) attracted 52,000 people to a total of 333 events including one-off talks, performances, workshops, exhibitions, installations and events. The University leads on the delivery of the city's literary festival, Off the Shelf, one of the largest and most accessible literary festivals in the UK.

As with all aspects of the Civic University role, the University works in close partnership with others in the City Region to support cultural vibrancy. It is a past Chair and current member of the Sheffield Culture Consortium. The consortium highlights the cultural assets of the city through initiatives like Our Favourite Places. It brings leadership and cultural direction for the City Region and seeks funding to develop Sheffield as a cultural destination.

In 2016, the Sheffield Culture Consortium was awarded £150,000 Arts Council funding to develop the interdependent relationship between culture and the visitor economy. The University of Sheffield led the bid in partnership with Marketing Sheffield. Funded activities contributed to the economic growth of the cultural and tourism visitor economies with projects to develop cultural tourism, including street art, festivals, modernist architecture, music and beer.

The University and its partners work in close partnership to deliver a consistently relevant and impactful cultural influence. Most recently, the University and Sheffield City Council partner with Our Favourite Places have launched the Sheffield Culture Hub, a new web platform to host arts and cultural online events as well as other activities from around the city during the coronavirus lockdown.



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## 8.3 Cross Cutting Enablers

### 1.1.6 Physical Environment

The analysis provided in this report takes account of the economic impacts of the University's estates strategy, in terms of the GVA and employment that construction activity drives. However, there are important wider impacts of the estates strategy - creating a high quality physical environment is central to making somewhere a good place to live, a key to well-being.

The University received an award for its outstanding work and vision to improve the environment and public realm of Sheffield at the 2017 national Times Higher Education Leadership and Management Awards (THELMAs). It was described by judges as being a "worthy winner" in the estates and facilities category for exhibiting "great creativity" and successfully "uniting university and city goals to improve the environment and public realm of Sheffield".

The University's work on the physical environment has an impact on people well beyond its staff and student body, it has significant reach into the community. For example, the Leavygreave Road scheme, part funded by the Sheffield City Region Investment Fund, is part of the University's Public Realm Project, working in partnership with Sheffield City Council. The green space at the heart of the University's campus received the Open Spaces Award at the 2018 Sheffield Design Awards, which celebrate the best public architecture, landscape and art in the region.

Academic colleagues from the Department of Landscape Architecture are creating pioneering and innovative public spaces in the city centre such as the Grey to Green linear park and Love Square. Grey to Green replaces a former inner-city dual carriageway with a continuous surface water management scheme of bioswales and rain gardens, alongside planted areas. The project is partly aimed at reducing flooding risk but also creates an inner-city green wildlife corridor, contributing to sustainable development, health and well-being as well as physical environment.

Finally, the University's Live Projects and Live Works initiative is discussed in a case study earlier in this report, have delivered almost 150 architecture projects with community groups, charities, health organisations and others in Sheffield since 1999. Live Works is the School Architecture's Urban Room in Sheffield city centre and is part of the Civic University strategy and ReNew Sheffield, which encourages meanwhile uses in Sheffield City Centre, improving the vibrancy of areas in transition and helping businesses to grow. Following all of the Civic University themes, the University is engaged with ReNew alongside partners Sheffield City Council, Sheffield BID, Wake Smith Solicitors, Sheffield Hallam University.

### 1.1.7 Skills

A key outcome of the University of Sheffield's teaching function is, of course, the production of highly skilled graduates and post-graduates into a global job market. Its role in supporting skills in the regional labour market is no less important. The University plays a crucial role in the region's skills system, proactively investing in higher vocational skills with apprenticeships in manufacturing and nursing.

Since 2014, the AMRC Training Centre has trained 1,300 engineering apprentices from more than 300 employers across the region. The University is the provider of apprenticeships for



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Trainee Nurse Associates at local hospitals and NHS Trusts (including Barnsley and Rotherham).

The University has also ensured retention of graduates in the regional labour market. Since 2013, it has worked with Sheffield Hallam University and Sheffield City Council to support SMEs in recruitment of skilled staff and job creation. The RISE programme was extended in 2016 to cover all nine local authority areas in Sheffield City Region. Evaluation evidence suggests that RISE is creating opportunities for more SMEs to employ new graduates and creating business benefits through more effective recruitment.

#### 1.1.8 Social Inclusion and Community Capacity

The University makes several types of contribution to communities across the Sheffield City Region. These include working with schools, employability initiatives and community capacity building projects.

In 2018/19 there were almost 130 schools directly registered for University of Sheffield widening participation programmes. The University is also part of the government funded local National Collaborative Outreach Programme (NCOP) consortium, engaging with Y9-Y13 pupils in 38 schools and 6 colleges across Sheffield, Barnsley, Doncaster and Rotherham, North Notts and NE Derbyshire. It aims to double the proportion of young people from disadvantaged backgrounds in Higher Education by 2020.

The University has designed and delivers a ground-breaking health and employment trial across the Sheffield City Region, Working Win. It was launched in 2018 and sponsored by the joint Work and Health Unit between the Department of Health and Department for Work and Pensions. More than 1,000 people have signed up to Working Win, which is a voluntary employment trial helping people with common health conditions to move into and stay in paid employment.

The University also has a local impact on individual places in the region. Many of the Live Works and Live Projects described above are focussed on engaging with communities and contribute to community assets and capacity. There are also knowledge exchange activities across the university that involve close working with community organisations and impacts on communities. For example, a partnership with Kellam Island industrial museum in 2019 delivered a six week project, with 10 events and over 400 attendees. This post-industrial area had been gentrified very rapidly, leaving many people in the community feeling disenfranchised. The project, titled From Brooklyn Works to Brooklynism, involved a wide range of cultural activities, including a play and a series of presentations. An evaluation of the project evidenced strong positive feedback from this community engagement activity.

#### 1.1.9 A role model employer, procurer, broker and trusted civic partner

One of Sheffield's largest employers, with a significant supply chain and purchasing power, the University is a major player in the regional economy. The evidence presented throughout this report points to an increasing focus on using this role for the benefit of the City Region.

Led by the Partnerships and Regional Engagement team, the University's strategic approach to working in partnership ensures it is woven through the economic, social and cultural fabric of the region. This was apparent throughout the consultation research undertaken for this study, an unusual finding for a research-intensive international university, and a testament to the University of Sheffield's distinctive impact on the City Region.







## 9.

# Summary and Conclusions

This section puts the quantifiable impact of the University of Sheffield into context and explains the implications for the important civic role of the University.

## 9.1 Summary of Quantifiable Impacts

Any economically active organisation will generate direct GVA. When economists consider the Gross Domestic Product (GDP) of a country it is the direct GVA of individual organisations that is taken into consideration and summed.

However, the economic impact generated by a university is far greater than the jobs and GVA that are supported directly within its buildings. The University of Sheffield is one of the largest employers in the Sheffield City Region and draws in many thousands of students and visitors. It contributes to the economic activity of other businesses and organisations through the spending it either directly controls or facilitates. The outputs of the University also drive productivity. As a result, it contributes to the economy in many ways, from the students that graduate from its courses and from the businesses and organisations it supports. It is therefore right to consider the economic impact of the University of Sheffield in a much wider sense than its direct GVA and employment alone.

This study estimates that, in 2018/19, the University of Sheffield generated:

- **£1.1 billion GVA** and supported **16,700 jobs** across the Sheffield City Region; and
- **£2.5 billion GVA** and supported **30,230 jobs** across the UK.

Within the Sheffield City Region, the University of Sheffield supports the equivalent of one in every 35 jobs.

A breakdown of the impacts is provided in the tables below.

**Table 9.1 Summary GVA Impact (£m) by Source, 2018/19**

Source	Sheffield City Region	UK
Regional Anchor Institution	759	1,232
Research and Innovation	143	742
Supporting the Community	6	7
Education and Training	154	537
<b>Total Impact</b>	<b>1,063</b>	<b>2,518</b>

Source: BIGGAR Economics Analysis. \*Totals may not sum due to rounding.



**Table 9.2 Summary Jobs Impact by Source, 2018/19**

Source	Sheffield City Region	UK
Regional Anchor Institution	15,910	26,630
Research and Innovation	730	3,480
Supporting the Community	50	80
Education and Training	10	50
<b>Total</b>	<b>16,700</b>	<b>30,230</b>

Source: BiGGAR Economics Analysis. \*Totals may not sum due to rounding.

## 9.2 Impact in Context

### 9.2.1 Regional Economic Context

In order to understand the scale of the economic impact generated by the University of Sheffield, it is useful to place the University's contribution within the context of the wider regional economy. The total GVA of the Sheffield City Region in 2018 was £27 billion. The University of Sheffield in 2018/19 supported £1.1 billion GVA for the Sheffield City Region, equivalent to 4% of the whole economy.

**Table 9.3 The University of Sheffield's Impact in Context: GVA**

	Sheffield City Region
University of Sheffield GVA Impact (£m)	1,063
Total GVA (£m)	26,959
<i>As % total economy</i>	3.9%

Source: BiGGAR Economics Calculation & ONS (2019), Regional Gross Value Added (Balance Approach).

In terms of employment, of the 579,000 jobs in the Sheffield City Region, the University of Sheffield supports almost 16,700. This is equivalent to 2.9% of all jobs, or one job in every 35.

**Table 9.4 The University of Sheffield's Impact in Context: Employment**

	Sheffield City Region
University of Sheffield Employment Impact (Jobs)	16,695
Total Employees (Jobs)	579,000
<i>As % of total economy</i>	2.9%

Source: BiGGAR Economics Calculation & ONS (2018), Business Register and Employment Survey.

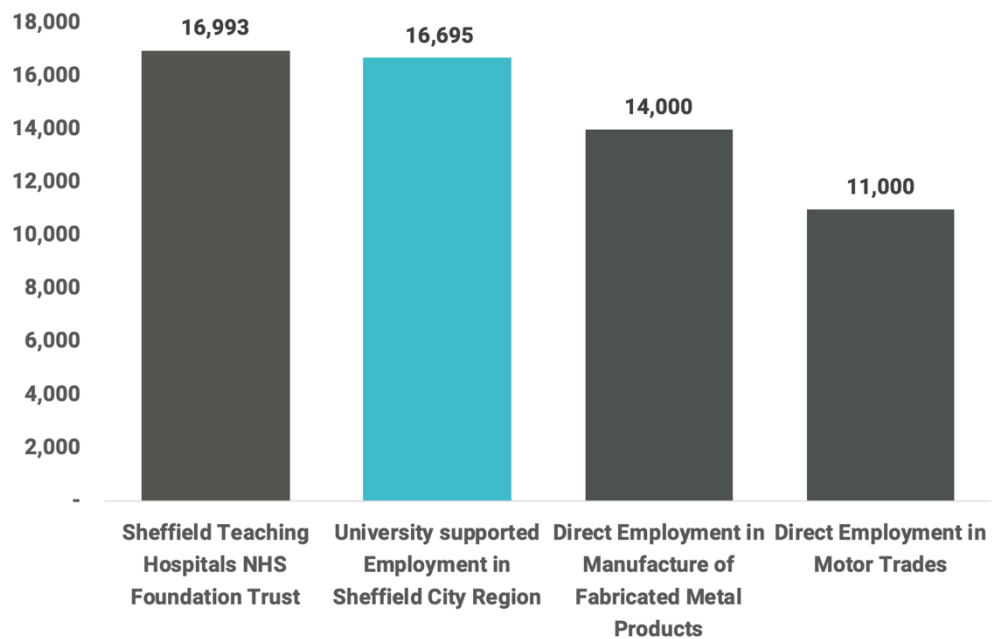
In comparison to other public service employers in the area, the University of Sheffield remains a large employer, employing 7,880 staff directly. In 2018, Sheffield City Council had



a total of 7,305 employees<sup>36</sup> whereas Sheffield Teaching Hospital employs around 17,000<sup>37</sup> members of staff.

The employment impact of the University of Sheffield in Sheffield City Region is greater than the direct employment of some of the major sectors in the economy. For example, there are 14,000 people employed in the manufacture of fabricated metals and 11,000 employed in the motor trade. Whilst this is not a direct like-for-like comparison, it helps to place the scale of the employment impact of the University of Sheffield in context.

**Figure 9-1 Jobs Supported by the University of Sheffield in Context**



Source: BiGGAR Economics Analysis

### 9.2.2 Sector Impact Context

Considering the impact of the University of Sheffield against other similar institutions can also provide insights into the University's impact. In order to draw meaningful comparisons, the University's impact has been considered against the average across five other Russell Group universities that have published comparable economic impact studies (University of Oxford, University of Southampton, University of Warwick, Durham University and University of Edinburgh).

Figure 9-2 provides a breakdown of the total impact of the Russell Group comparator universities by source. To interpret this figure, it is helpful to differentiate between two types of impact. The first type of impacts are those that arise wholly or mainly as a by-product of the University's activities and that might therefore be considered incidental. These types of impact include core operational impacts (direct impact, supplier spending,

<sup>36</sup> Sheffield City Council (2018) Annual Workforce Equality Report 2017-18

<sup>37</sup> NHS (2020) NHS Hospital & Community Health Service (HCHS) monthly workforce statistics - Staff in Trusts and CCGs



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staff spending, capital spending), student impacts, graduate productivity benefits and tourism impacts.

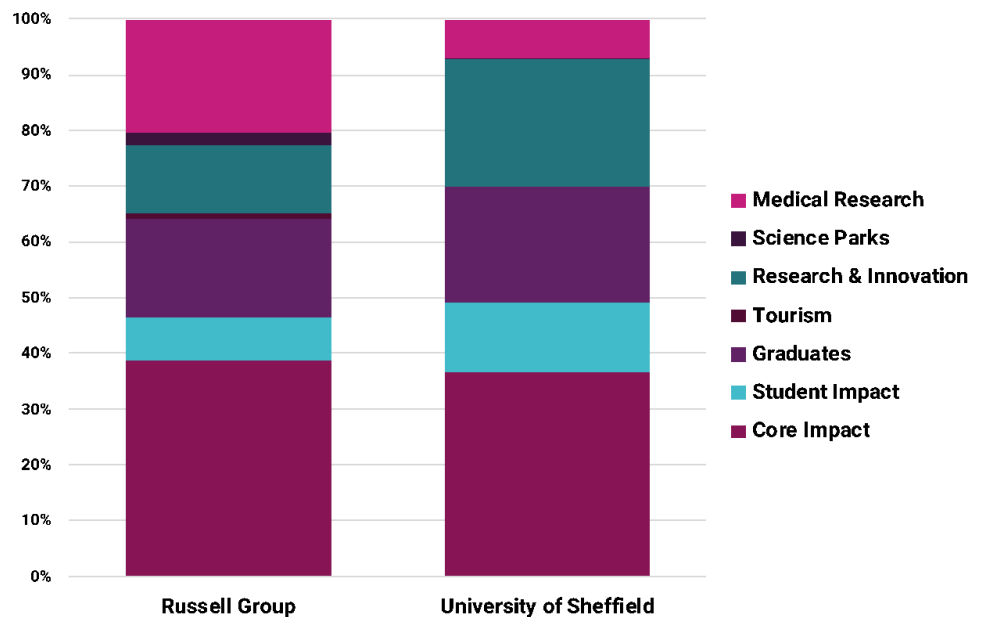
The second type of impacts arise from activities that are undertaken specifically with the intention of generating some form of impact (whether economic or not). These types of impact, which might be described as purposeful impacts, include benefits from knowledge transfer and commercialisation, returns to medical research and other activities designed to support the local and regional economy such as science parks.

Around 70% of the University of Sheffield's impact can be termed incidental impacts compared with around 65% across Russell Group universities. This is primarily due to the student and graduate impacts being a slightly larger component of total impact at the University of Sheffield compared to the average across the comparator universities.

Purposeful impacts make up 30% of the University of Sheffield's impacts, with the majority of this impact arising from the University's research and innovation activity. Research and innovation activity is only around 12% of total impact across the Russell Group universities whereas at the University of Sheffield it is around 23% of total impact. Across the Russell Group universities, medical research and science parks form a larger proportion of purposeful impact than the University of Sheffield.



**Figure 9-2 Comparison of Impact by Source**



Source: BiGGAR Economics Analysis

### 9.3 Conclusions

Evidence presented throughout this report highlights the role of the University of Sheffield in supporting the economic and civic life of Sheffield City Region as well as giving it a voice on an international stage.

The quantitative impacts demonstrate a strong role as an anchor institution. The University is a large employer with significant purchasing power, deeply rooted in the City Region’s economy through its supply chains, capital investments, staff and student spending, and students’ contribution to the local labour market.

The University of Sheffield’s academic research is world class, delivered collaboratively with local and global partners and translated into real world applications in technology, manufacturing, healthcare, culture and national policy agendas. There are particular strengths in manufacturing. This study has described clear impacts from research and innovation activity, including producing new high value businesses, creating technologies to solve some of the world’s most pressing challenges, and supporting businesses in the City Region to develop novel solutions for process and product development.

Producing high quality graduates is one of the most visible outputs of the University. Almost 10,000 people graduate each year with an undergraduate or post-graduate degree. The vast majority (90%) stay in the UK and a quarter remain in the Sheffield City Region, playing an important role in the productivity and skills mix.

The University, its staff and students are all vital members of the community. Student volunteers support charities across the City Region. Visiting friends and families of staff and students provide important tourism benefits to the regional economy, along with visitors to conferences and events hosted by the University. Public engagement activities attracted



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over half a million people in 2018/19, creating a significant reach into regional communities. Finally, overseas students bring diversity to the campus, city and region.

All these benefits and impacts are brought together to create a truly civic university, contributing to the economic, social, environmental, and cultural life of Sheffield City Region. Whilst most universities are anchor institutions, few can provide strong evidence that allows them to be defined as a Civic University. The University of Sheffield's civic role can be seen in the case studies presented in this report. It is woven together through a co-ordinated strategy that delivers meaningful and sustainable economic impact across Sheffield City Region.

The University of Sheffield has a carefully choreographed approach to regional engagement, working in consort with other anchor institutions and a wide variety of communities of interest, while co-ordinating and targeting its own activity to best effect. The key to successful regional engagement has been a strong and consistent narrative, one that considers the unique contribution made by the University and how it matches the region's economic need and cultural distinctiveness. It has framed its strategic role and operation towards this civic goal, creating a major contribution to the well-being of Sheffield City Region and its people.

## 9.4 Implications for Covid-19 Recovery

These findings demonstrate that the University of Sheffield is an incredibly significant economic player, putting it in a strong position to contribute to economic recovery as we navigate our way out of the Covid-19 pandemic. The University has already played a role during the pandemic, with its work in the health and care sector in Sheffield City Region being particularly important. It has also played an important economic and social role signposting businesses to sources of support and creating opportunities to sustain an enhanced online presence for the cultural sector.

The University of Sheffield will have important roles to play nationally and in Sheffield City Region, driving recovery and transformation. More specifically, these include:

- providing the human and intellectual capital that will be necessary in the North of England, driving the levelling up agenda;
- building the resilience of the regional health and care sector;
- supporting the net zero challenge and the green recovery; and
- providing civic leadership in Sheffield City Region, in the economy, civic society, culture and health.

The recovery and transformation of the UK and Sheffield City Region economies will need to be based on knowledge and innovation if it is to be sustainable and resilient. The University of Sheffield is well positioned to be a source of the human and intellectual capital that will be required.



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