

# Economic Impact of the University of Surrey 2021/22

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A report to the University of Surrey  
March 2023





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# 1. Executive Summary

The University of Surrey makes a substantial and increasing contribution to the UK economy and is an important part of the foundations of Surrey's thriving innovation ecosystem.

In the academic year 2021/22, the University of Surrey generated:

- £1.1 billion GVA and 14,500 jobs in the Borough of Guildford;
- £1.3 billion GVA and 17,620 jobs in the County of Surrey; and
- £1.9 billion GVA and 25,360 jobs across the UK.

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**In 2021/22 the University of Surrey contributed £6.37 Gross Value Added (GVA) to the UK economy for every £1 of income and nearly 8 jobs for each employee**

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The economic impact of the University can be broken into two distinctive components: operational and purposeful.

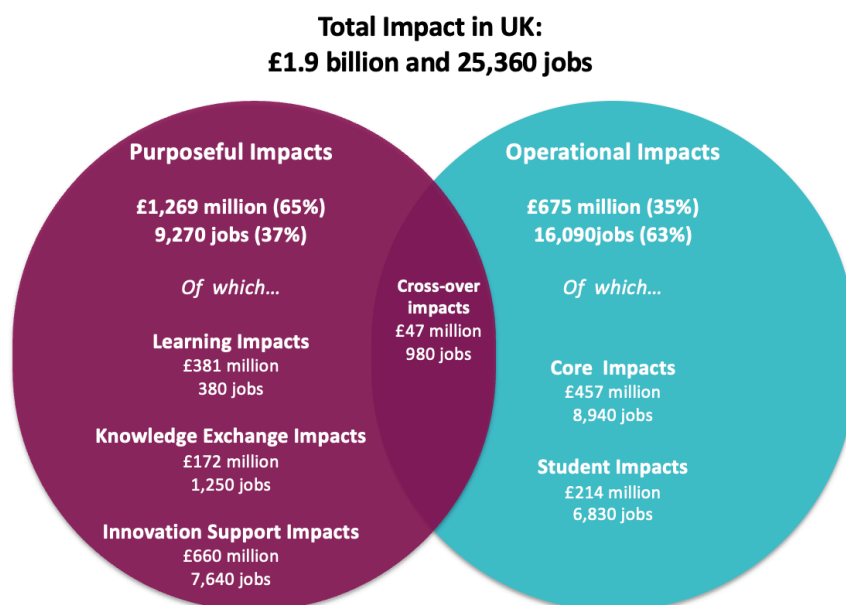
The University's operational impacts include the direct employment provided by the University, the impact of its expenditure on supplies and the expenditure of its staff. They also include activity supported by students because of the money they spend in the economy, their part-time work and volunteering. Similar impacts are created by any large organisation with a significant staff complement, an extensive supply chain and a large consumer base, regardless of the nature of their work.

Purposeful impacts are associated with the nature of the organisation and reflect outcomes designed specifically to drive innovation and productivity growth within the economy. In a sense they measure the wider value that universities bring beyond their impact as large employers with a significant supply chain.

The University of Surrey's purposeful impacts include the learning impacts generated by graduates of the University. This includes the impact students generate for businesses while studying through internships and placements and the value they add to the productivity of the economy after they graduate and begin applying their knowledge and skills in the workplace. The purposeful impacts of the University also include the impact of the University's knowledge exchange and commercialisation activity and the benefits of the support it provides to industry through SETsquared Surrey and the Surrey Research Park.

In 2020/21 purposeful benefits accounted for around two thirds of the total GVA impact of the University and around one third of the total employment impact.

**Figure 1-1 Total Economic Impact of the University of Surrey 2021/22**



Source: BiGGAR Economics Analysis

The largest economic contribution of the University comes from its innovation support activities, which generated £660 million GVA for the UK economy and support over 7,640 jobs. This includes the support the University provides for start-up enterprises through SETsquared Surrey, the impact of additional funding businesses secure through the S100 Angel Investment Club and the impact of tenants of the Surrey Research Park.

It is not possible to fully quantify all the economic benefits generated by the University of Surrey. At the local level the University plays an important role as an economic anchor, providing jobs and employment for local people, supporting the health of Guildford town centre through the expenditure of students and staff and by engaging in a wide range of initiatives to support local community and economic development.

At a more macro level the University also plays an important role in supporting the growth and development of emerging and established sectors of the Surrey economy. This support has been instrumental in the success of some of the defining sectors of the region's economy including satellites and digital games. It also provides the basis for the University's position as part of the foundations of Surrey's highly successful and internationally acclaimed innovation ecosystem.

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## 2. Introduction

This report assesses the economic impact created by the University in both quantitative and qualitative terms.

### 2.1 Background

The University of Surrey was established in 1966 with the grant of its Royal Charter and has grown over time to become one of the UK's leading higher education institutions. With a strong reputation across several academic fields, and a history of supporting innovation, the University ranked 24th in the UK (out of 121 institutions) in the Guardian University Guide for 2023 and 9<sup>th</sup> (out of 175 degree awarding providers) in the National Student Survey for 2022.

The University operates on a significant scale, both locally, and within the UK. In 2021/22 it had 15,570 full-time and part-time students, it employed 3,850 members of staff and it generated a turnover of £305 million.

BiGGAR Economics previously assessed the economic impact of the University of Surrey in 2020 (for the 2018/19 academic year), and in 2018 (for the 2016/17 academic year). The 2020 study showed that, in 2018/19, the University generated:

- £1.0 billion GVA and supported 12,230 jobs in the Borough of Guildford;
- £1.2 billion GVA and supported 14,490 jobs in the County of Surrey; and
- £1.8 billion GVA and supported 19,430 jobs across the UK.

At this time, it was found to contribute almost £6 GVA to the UK economy for every £1 in income it received, and it supported 6 jobs throughout the UK economy for every person it directly employed.

### 2.2 Study Objectives and Scope

#### 2.2.1 Study Objectives

The purpose of this report is to update the previous work and to demonstrate:

- the current scale of economic impact created by the University;
- the range of economic impacts it supports, including:
  - core employment & gross value added;
  - multiplier effects (supplier & income multipliers);
  - student impacts;
  - graduates for the knowledge economy;
  - research outputs;
  - commercialisation & knowledge transfer;

- wider impacts (e.g. capital investment and social impacts); and
- the return it generates for (private & public) investment.

### 2.2.2 Time-scale

Unless otherwise stated, this assessment is based on data for the 2021/22 academic year.

### 2.2.3 Study areas

The impact is calculated for three geographic areas:

- the Borough of Guildford;
- the County of Surrey; and
- the UK.

Data are presented on an inclusive basis, ie. the impact in the UK includes Surrey and the impact for Surrey includes the impact for Guildford.

### 2.2.4 Rounding

Unless stated otherwise, all monetary figures have been rounded to the nearest whole £ million, while all jobs and student figures have been rounded to the nearest 10.

## 2.3 Purposeful and Operational Impacts

The economic contribution generated by universities can be grouped into two main categories: **purposeful impacts** and **operational impacts**.

**Purposeful impacts** are associated with the nature of the organisation and reflect outcomes designed specifically to drive innovation and productivity growth within the economy. In a sense they measure the wider value that universities bring beyond their impact as large employers with a significant supply chain. The following impacts of the University of Surrey can be thought of as purposeful:

- the learning impacts generated by graduates of the University. This includes the impact students generate for businesses while studying through internships and placements and the value they add to the productivity of the economy after they graduate and begin applying their knowledge and skills in the workplace;
- knowledge exchange impacts arising from the commercialisation of research, start-up and spin-off enterprises, licensing of intellectual property and collaborative activity with industry;
- the economic and wider social benefits of medical research; and
- the impacts of the business support services provided by the University including incubation facilities, enterprise finance and the Surrey Research Park.

**Operational impacts** are created by any large organisation with a significant staff complement, an extensive supply chain and a large consumer base, regardless of the



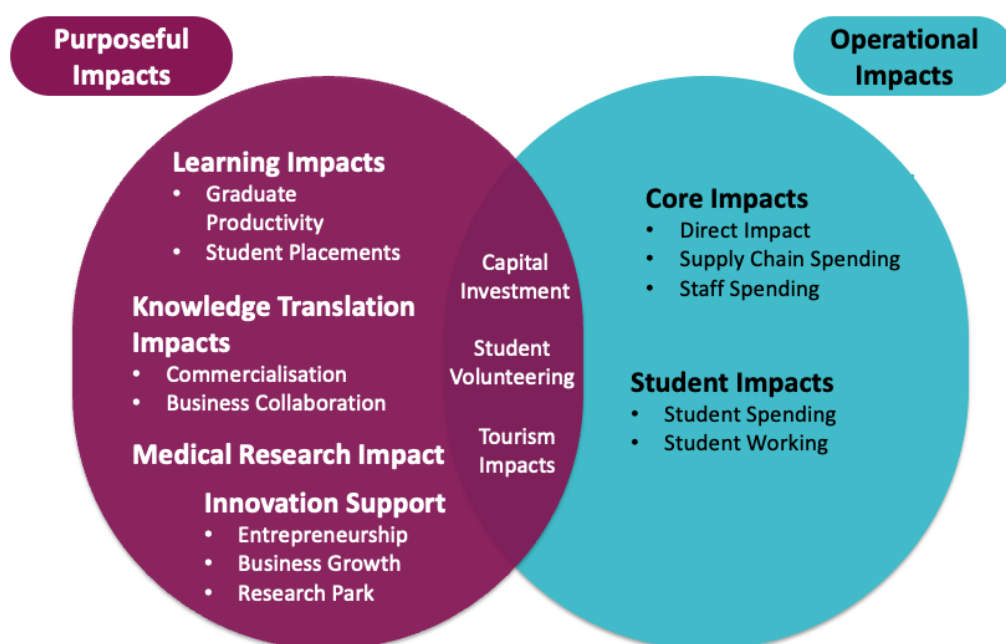
nature of their work. For this reason, they can be thought of as operational impacts. In the case of the University of Surrey these include:

- the core impact generated by employing staff, their expenditure on goods and services, the expenditure of their employees, and their expenditure on physical capital and research infrastructure;
- the impact generated by the student community from spending money in the local economy and the contribution they make by working or undertaking voluntary activity during their studies; and
- the contribution to the tourism sector made by visitors to staff and students.

The division between purposeful and operational impacts is illustrated in Figure 2-1 which shows the split is not always clear-cut. For example, some tourism impacts are associated with conferences and events which are directly related to core areas of research or knowledge exchange activity. Similarly, students who decide to volunteer often do so independently of the University, but their ability to do so may rest on skills or knowledge gained during their work or studies. The impact of capital spending also creates a purposeful impact in creating new facilities, however it only happens to support the core activity.

In reality, the crossover areas are relatively small, representing less than 3% of the total impact generated by the University. They have been included in the totals for operational impacts throughout the report.

**Figure 2-1: University of Surrey - Purposeful and Operational Impacts**



Source: BiGGAR Economics

Based on our analysis of the University of Surrey's economic contribution in 2021/22:

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- 65% of its GVA impact and 37% of its employment impact can be thought of as purposeful, and
  - 35% of its GVA impact and 63% of its employment impact can be thought of as operational.

The distinction between purposeful and operational impact is a useful framework for analysing the University's contribution more insightfully, to give a clearer view on the true contribution it makes to economic development. It has been used throughout the report to summarise the impact it creates.

## 2.4 Report Structure

The remainder of this report is structured as follows:

- Section 3 describes the operational impacts generated by the University through its role as a large employer, from its student community, through its spending on goods and services and from its capital projects;
- Section 4 presents the learning impacts created by the University's graduates and from student placements;
- Section 5 describes the impacts created by knowledge exchange activity including industrial collaboration, spin-outs, licensing technology and from its medical research;
- Section 6 describes the economic impacts associated with medical research undertaken at the University;
- Section 7 discusses the impacts which stem mainly from innovation support including business incubation, the S100 Club and Surrey Research Park;
- Section 8 describes the University's role in creating an innovation ecosystem which has become a self-sustaining feature of the area; and
- Section 9 summarises the economic impacts and outlines the main differences between the impact reported in this report and that reported in the 2020 analysis.



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## 3.

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# Operational Impacts

As a large employer with an extensive supply chain and a significant number of students, the University has a sizable economic footprint in the local area.

## 3.1 Introduction

Operational impacts mainly reflect the scale of an organisation and arise from any employer, regardless of the nature of their work. The University of Surrey is one of the largest employers in Guildford and, as such, it has a sizeable economic footprint in the local area. Its operational impacts include:

- Core impacts, which are the:
  - direct impact – the income it receives and the staff it employs;
  - supply chain impact – from expenditure on goods and services;
  - staff spending impact – from staff spending salaries in the economy; and
  - capital expenditure impact – from investment in capital infrastructure.
- Student impacts:
  - from spending money in the local area; and
  - from working in the local area.
- Tourism impacts:
  - from people visiting staff and students; and
  - from people attending conferences and events at the University.

## 3.2 Core Impacts

### 3.2.1 Direct Impact

The direct economic impact is the value an organisation adds to the economy through its operations, and it is measured in terms of Gross Value Added (GVA), and by the employment it directly supports. In the context of a university, the GVA it adds can be estimated as the difference between total income and total expenditure on supplies.

In 2021/22, the University of Surrey had a total income of £305 million and spent £95 million on goods and services. Therefore, the direct GVA it created was £210 million. In addition, the University directly employed 3,210 staff, equivalent to 2,735 FTEs.

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### 3.2.2 Supply Chain Impact

As large and complex organisations, university supply chains have an impact on the wider economy by increasing turnover and supporting employment with their suppliers.

In 2021/22, the University spent around £95 million on goods and services, excluding spending on capital investment (estimated separately in Section 3.2.4). Based on data provided by the University, around 8% of supply chain expenditure went to suppliers based in Guildford, 16% was spent with suppliers based in Surrey and 94% was spent with suppliers based in the UK. This has been converted into GVA and employment impacts by applying appropriate ratios and calculating multiplier effects.

### 3.2.3 Staff Spending

The staff who work for the University have an impact on the wider economy by spending their wages and salaries in the areas where they live.

It is estimated that the 3,210 staff employed by the University receive around £170 million in salaries, wages and other staff costs each year. Furthermore, 30% of staff who work for the University live in Guildford, 58% live in Surrey and 98% live in the UK. This has been converted into GVA and employment impacts by applying appropriate ratios, calculating multiplier effects and then apportioning these to the relevant geographic areas.

### 3.2.4 Capital Spending

Capital investments made by the University have an impact on the construction sector and on businesses which supply capital equipment. As capital spending fluctuates from year to year, an average has been calculated based on actual spending over the last five years (2018 - 2022). On this basis, it was estimated that the University spends around £45 million per year on capital projects.

Based on data provided by the University, 16% of recent capital spending has been secured by companies based in Surrey and 86% has been secured by companies in the UK. The spending was converted into GVA and employment impacts by applying appropriate GVA and employment ratios and multipliers, and apportioning these to the relevant geographic areas.

### 3.2.5 Summary of Core Contributions

Summing together the economic impact generated by core activities alone, it is estimated that the University creates an economic contribution of £457 million GVA and supports 8,940 jobs in the UK each year. 51% of the GVA impact is contained in Guildford and 60% is contained in Surrey. A summary of the annual impact from core activities by source and by area is provided in Table 3-1.

**Table 3-1: Summary of Core Operational Impacts**

Source of Impact	Guildford	Surrey	UK
GVA (£ million)			
Direct impact	210	210	210
Supply chain impact	6	13	100
Staff spending impact	13	46	108
Capital investment impact	2	5	38
<b>Total</b>	<b>231</b>	<b>274</b>	<b>457</b>
Jobs			
Direct impact	3,210	3,210	3,210
Supply chain impact	110	260	1,930
Staff spending impact	370	1,310	3,200
Capital investment impact	20	80	600
<b>Total</b>	<b>3,720</b>	<b>4,850</b>	<b>8,940</b>

Source: BiGGAR Economics Analysis

### 3.2.6 A Good Neighbour and Responsible Community Anchor

The University recognises its significant economic footprint around Guildford and that it is a major part of the fabric of the town. As a socially aware neighbour, it acts in several ways to both support the area practically, and to help level up opportunities across communities. For example, as well as providing free parking on campus for local residents at weekends it is also working with local schools, such as the King's College School in Guildford, to help improve performance (see Case Study Panel later in this chapter on Raising Aspirations in Schools).

As an anchor institution in Guildford, it is a member of the nation-wide Civic University Network, and is creating its own Civic University Agreement for Guildford, Surrey and other key regional partners. This will bind together past achievements, current partnerships and new opportunities in a robust and reciprocal way to support identified local needs and developments. The University is currently committed to effective civic partnership working based around:

- embedding sustainability in its day-to-day operations, teaching and research, and by aiming to achieve a Net Zero carbon target by 2030;
- working with key actors to resolve local traffic issues;
- working to reducing single occupancy car travel and managing transport for large events to reduce the impact on the surrounding area;
- investing in on-campus student accommodation and working with others to reduce issues associated with students living off campus in local HMOs; and
- operating an active system for managing issues around the safety and behaviour of students when they are off campus.



# Raising Aspirations in Schools

## The University is helping nearby schools to raise aspirations and recover from the pandemic

During the pandemic, the University's Widening Participation Team worked closely with targeted schools across the area to co-create Surrey Stars, a sustained attainment programme for schools where higher than average numbers of students are eligible for free school meals and there are gaps in GCSE attainment. It offers a series of in-school workshops and on-campus visits for learners in Years 7 to 11 and has been designed to support young people around four themes:

- **money** – management, student finance and affordability;
- **academic skills** – exploring skills through interactive workshops;
- **decision making** – increasing confidence in young people to encourage autonomy in identifying their future pathways; and
- **university** – learning more about universities and the opportunities available.

The University's success with the Finding our Futures initiatives at Kings College school in Guildford helped the Widening Participation Team to pilot and further develop activities before rolling them out more broadly to other schools<sup>1</sup>.

The University established a formal partnership with Kings College school in 2017 after it had been assessed by Ofsted as "Inadequate". After a concerted effort which included a programme of support from the University, the School significantly reduced its attainment gap and the follow-up Ofsted inspection in 2018 rated the School's effectiveness as "Good". At this point it was ranked in the top 3% most improved schools in England. The University was awarded the Widening Access Partnership Award by the National Educational Opportunities Network in 2019 for its work with the School.

The University carries out an annual survey of pupils at Kings College which measures the impact of the partnership. Between 2017 and 2019 this showed an increase of 43% in students' motivation to work hard to gain a good education, and a 22% increase in their desire to think more about their future. Its partnership work with Kings College school has continued throughout the pandemic though virtual and remote opportunities. As a result, 99% of pupils engaged in at least one aspiration-raising activity during this time, and 79% engaged with three or more.

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<sup>1</sup> Office for Students, 2022, University of Surrey: Partnership with Kings College Guildford.

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### 3.2.7 Future Local Development

In addition to its current extensive role, the University is also an active facilitator in the future development of the area. Through the local planning process, Guildford Borough Council has identified several potential sites for new homes which could accommodate a sustainable expansion of the town. This includes Blackwell Park to the west of Guildford, land which is owned by the University, and is in addition to the site at Blackwell Farm which has been proposed to house a new solar energy development (see Case Study Panel on Blackwell Solar Farm).

As a steward of its land, and with the intention of leaving an important legacy in the area, the University has set three objectives for the proposed development at Blackwell Park:

- a sustainable development which is framed by nature;
- place-making which supports people and communities; and
- a development which delivers powerful economic, infrastructure and social benefits to the University, the community, Guildford and the region.

Plans for the new neighbourhood include provision for:

- 1,800 new homes, including affordable housing for eligible key workers at local institutions such as the hospital and the University;
- 35,000 sq m of land for employment through the expansion of Surrey Research Park;
- a new local centre including retail, GP and community services;
- new education facilities including a new primary school and land for a new secondary school;
- formal recreation space and areas for children to play;
- parks, informal green space and new habitat areas;
- suitable alternative green space;
- access from the A31 and Surrey Research Park;
- improved public transport through a sustainable movement corridor, cycle paths and walkable routes; and
- traveller pitches

The University, its Sports Park and its Research Park would become long-standing neighbours to any new community, and it is keen to create a “proud to live here, proud to work here” ethos.



## Blackwell Solar Farm

A proposed solar farm to supply the University represents a significant step towards its net-zero goal

Working in partnership with SSE Energy Solutions, the University has developed plans for a 12.2MW solar facility on 21 hectares of University-owned farmland to the west of Guildford. This would vastly expand its energy supply from renewable sources. If successful, the development could save the University around £2 million in energy costs each year and would act as a steppingstone in reaching its target to achieve net-zero carbon emissions for Scopes 1 and 2\* by 2030.

On this scale, the facility would reduce carbon emissions by around 1,110 tonnes per year, which is equal to removing over 2,000 cars from the road, or supplying energy to 4,000 UK homes for each year it operates.

A planning application will be submitted in early 2023 and the site could begin to deliver power from early 2024. The development has a 35-year lifespan, after which all equipment would be dismantled and removed from the site. The University is negotiating a commitment to purchase the power output for 25 years and SSE have made an application for export capacity if peak solar output exceeds the University's peak demand.

The proposed development has been carefully designed to blend into the landscape using natural screening from hedgerows and trees and includes plans to enhance local biodiversity through wildflower planting, nature corridors and bug hotels. Monitoring data from similar solar facilities suggests that the abundance and variety of plants, pollinators, birds and other wildlife increases over time at these sites.

Additional measures taken by the University to reach its net-zero target include:

- improving the energy efficiency of its buildings;
- adding solar rooftops to the sports park and teaching blocks;
- purchasing energy from clean sources;
- adding an additional borehole to enhance the water supply;
- progressing with plans to electrify 100% of its vehicle fleet by 2025; and
- adding around 85 electric vehicle charging points on campus for staff, students, visitors and neighbours in 2023.

\* Scope 1 relates to direct emissions from burning fuels on site and includes gas for heating and petrol and diesel for University-owned vehicles. Scope 2 relates to indirect emissions and includes electricity generated off site and purchased by the University.



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## 3.3 Student Impacts

Students generate economic impacts in the local economy through their day-to-day spending, and by working part-time during their course of study. The focus of analysis here is on full-time students as the spending patterns and labour market contributions made by part-time students is predominately driven by their work rather than their studies. A proportion of students also volunteer within the local community, which supports the work of charities and services in the third sector.

### 3.3.1 Student Population

In 2021/22, there were 15,570 students enrolled at the University of Surrey on all higher education courses. Almost 92% (14,280) studied on a full-time basis, while the remainder studied part-time. Around 72% were undergraduates, 20% were postgraduates and the remaining 7% were PhD students. UK-domiciled students accounted for 74% of enrolments, a further 8% were students from the EU and 17% were non-EU students.

### 3.3.2 Student Spending Impact

Students term-time spending habits support turnover and employment in local businesses. Many students may not otherwise have come to Surrey were it not for the University, therefore their spending is additional to the local area.

The student spending impact is estimated based on:

- where students live – the type of accommodation students occupy during their studies is a key influence on their expenditure. For example, students living in rented accommodation spend significantly more money on housing costs, food and household goods than those who live with their parents or guardians. Data from the University suggest that around 82% of students live in rented accommodation, either at the University or in the private sector, and the remaining 18% live with parents or guardians. Furthermore, an estimated 80% of students live in Guildford during term time and 90% live in Surrey as a whole; and
- their spending patterns – this can be estimated based on data from the Student Income and Expenditure Survey for 2014 to 2015 which was published by the Department for Education in 2018. It suggested that, on average, students spent £9,920 on housing and living costs in 2014/15. Adjusting for inflation, the annual spend per student in 2021 was estimated to be £13,127.

Collectively, the annual expenditure on living costs and rent for all full-time students at the University amounted to £136 million. This figure was apportioned between study areas based on where students live. Total expenditure was then converted into GVA and employment impacts by applying appropriate ratios and calculating the multiplier effects.

### 3.3.3 Impact of Student Part-time Work

Students who work part-time while they study also contribute to the economy. This is usually in businesses close to where they live and it provides an important source of additional labour for companies in the area.

Based on information from the Labour Force Survey for 2016, it was assumed that 33% of full-time students work during their studies. At the University of Surrey, this amounts to 4,710 people. Further research from the NUS suggest that students work for an average of 14 hours per week<sup>2</sup>. Although students work in a range of sectors, the most common include hospitality and retail. However, not all jobs taken by students will be additional, as some may displace non-students, so it was necessary to make an adjustment to account for this. This adjustment reflected the relatively low rate of youth unemployment in each of the study areas, which implies that levels of displacement are likely to be low. On this basis, 82% of all student part-time jobs were assumed to be additional to the labour market.

The impact of student employment was converted into GVA and employment impacts by applying appropriate sectoral ratios and multipliers.

### 3.3.4 Student Volunteering

Finally, students at the University create an economic impact through their activity as volunteers. While this enables them to acquire useful skills, it also allows the organisations where they volunteer to deliver their services. This analysis was informed by an NUS Connect survey in 2014 which reported that 31% of students had volunteered over the previous academic year for an average of 44 hours per year. During 2021/22, this amounted to approximately 194,820 hours of activity from around 4,430 students.

As with part-time work, it was assumed that students volunteered in the areas where they lived. To estimate the economic contribution this supported, the total number of hours volunteered was multiplied by £11.21, which represents the estimated value of unpaid volunteering the UK based on Community Life and time use surveys<sup>3</sup>. The value of this activity was converted into GVA and employment impacts by applying appropriate ratios and calculating multiplier effects.

### 3.3.5 Summary Student Impact

Through the methods described above, it was estimated that the combined economic activities associated with the student community at the University of Surrey generates:

- £111 million GVA and supports 3,540 jobs in Guildford;
- £146 million GVA and supports 4,650 jobs throughout Surrey; and
- £214 million GVA and 6,830 jobs across the UK.

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<sup>2</sup> NUS, Still in the Red

<sup>3</sup> ONS, 2017, Changes in the value and division of unpaid volunteering in the UK: 2000 to 2015.

**Table 3-2: Summary Student Impact**

	<b>Guildford</b>	<b>Surrey</b>	<b>UK</b>
<b>GVA (£ million)</b>			
Student spending	69	91	136
Part-time work	40	52	74
Volunteering	3	3	5
<b>Total</b>	<b>111</b>	<b>146</b>	<b>214</b>
<b>Jobs</b>			
Student spending	2,120	2,820	4,240
Part-time work	1,400	1,810	2,530
Volunteering	20	20	60
<b>Total</b>	<b>3,540</b>	<b>4,650</b>	<b>6,830</b>

Source: BiGGAR Economics Analysis

## 3.4 Tourism Impacts

The final element of the operational impact which was considered is the economic activity generated by visitors to the University of Surrey and to its staff and students.

### 3.4.1 Visiting Friends and Relatives

Friends and relatives of staff and students generate an economic impact during their visits by spending money in the local economy. To estimate the number of visits this generates, the number of staff and students living within each study area was multiplied by the rate of overnight domestic visitors per head of population in Surrey (0.26<sup>4</sup>) and by the rate of overnight international visitors per head of population in Surrey (0.65<sup>5</sup>).

The total expenditure associated with this activity was estimated by multiplying the number of visitors by their average spending per trip. Research data suggest that for domestic visitors this was £88<sup>6</sup>, and for overseas visitors it was £343<sup>7</sup>. Both expenditure figures were discounted to allow for VAT. To estimate the direct GVA and direct employment this generates, expenditure was divided by the turnover/GVA and turnover/job ratios for the relevant sectors from the Annual Business Statistics<sup>8</sup>. Type 1 and Type 2 multipliers were then applied using an average for the relevant sectors.

<sup>4</sup> Kantar (2020), The Great Britain Visitor Survey 2019 Annual Report.

<sup>5</sup> Visit Britain (2020), Inbound nation, region & county data.

<sup>6</sup> Kantar (2020), The Great Britain Visitor Survey 2019 Annual Report.

<sup>7</sup> Visit Britain (2020), Inbound nation, region & county data.

<sup>8</sup> Office of National Statistics (2022), Annual Business Statistics.

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### 3.4.2 Open Days

The University's open days for prospective students attract visitors to Guildford to view the facilities on offer. It hosted five open days in 2021/22 which were attended by around 6,330 prospective students, most of whom were accompanied by family or friends. The majority of visitors (95%) were assumed to be day visitors with spending estimated at £25<sup>9</sup> per day. The remainder were assumed to be overnight visitors and their spending was estimated using the average for overnight spending for domestic and overseas visitors. Expenditure figures were discounted to allow for VAT. Relevant ratios and multipliers were used to estimate the GVA and employment impacts, and the UK impacts were further discounted by half to account for the fact that not all visits were additional to the UK.

### 3.4.3 Conferences and Events

The University of Surrey attracted around 43,330 visitors to conferences and events throughout the year, of which 8,680 people were assumed to be overnight visitors. Their expenditure was estimated using data from the GB Tourism Survey, which suggest that day visitors to Guildford spend £25<sup>10</sup> per day, and overnight visitors to Surrey spend an average of £51<sup>11</sup> per night. The GVA and employment contribution this supports was calculated in a similar way as for visitors attending open days and events.

### 3.4.4 Surrey Sports Park

Surrey Sports Park provides state-of-the-art facilities for students and the wider public to practice sports, remain healthy and improve their wellbeing. This attracted an estimated 50,207 visitors to events in 2021/22 and it was assumed that 80% of these visitors were day visitors, 15% were overnight domestic visitors and 5% were overnight international visitors. It was further assumed that 50% of event participants were additional to Guildford, 25% were additional to Surrey and 25% were additional to the UK. The expenditure this generated was estimated by multiplying the relevant expenditure profile by the number of day visitors and international visitors to each study area. This was then discounted to allow for VAT. The relevant turnover per GVA, turnover per job and Type 1 and Type 2 multipliers were applied to estimate its GVA and employment impacts.

### 3.4.5 Summary Tourism Impact

Taken together, all tourism activity which took place because of the University of Surrey in 2021/22 generated £4 million GVA and supported 260 jobs in Guildford, £4 million GVA and 270 jobs in Surrey, and £4 million GVA and 330 jobs across the UK.

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<sup>9</sup> Kantar (2020), The Great Britain Day Visitor Survey 2019.

<sup>10</sup> Kantar (2020), The Great Britain Day Visitor Survey 2019.

<sup>11</sup> Kantar (2020), The Great Britain Visitor Survey 2019 Annual Report.

**Table 3-3: Summary Tourism Impacts**

Source of Impact	Guildford	Surrey	UK
GVA (£ million)			
Visiting Friends & Relatives	2	2	3
Open Days	<1	1	<1
Conferences and Events	<1	<1	<1
Surrey Sport Park	1	1	1
<b>Total</b>	<b>4</b>	<b>4</b>	<b>4</b>
Jobs			
Visiting Friends & Relatives Impact	130	150	210
Open Days Impact	30	40	30
Conferences and Events Impact	30	40	30
Surrey Sport Park Impact	70	40	50
<b>Total</b>	<b>260</b>	<b>270</b>	<b>320</b>

Source: BiGGAR Economics Analysis

## 3.5 Summary Operational Impacts

All elements of the University's operational impact stemming from its core activities, its student community, and the tourism it draws to the area supports an estimated £675 million GVA and 16,090 jobs throughout the UK. Just over half (51%) of the GVA impact and 47% of the employment impact is contained in Guildford, while 63% of the GVA impact and 61% of the employment impact is contained in Surrey.

**Table 3-4: Summary Operational Impacts**

Source of Impact	Guildford	Surrey	UK
GVA (£ million)			
Core impacts	231	274	457
Student impacts	111	146	214
Tourism impacts	4	4	4
<b>Total</b>	<b>346</b>	<b>424</b>	<b>675</b>
Jobs			
Core impacts	3,720	4,850	8,940
Student impacts	3,540	4,650	6,830
Tourism impacts	260	270	320
<b>Total</b>	<b>7,510</b>	<b>9,770</b>	<b>16,090</b>

Source: BiGGAR Economics Analysis

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## 4. Learning Impacts

Graduates from the University of Surrey make a greater contribution to the economy because of their education.

The additional skills and knowledge attained by graduates from the University of Surrey leads to increased productivity throughout their careers. This is associated with higher levels of income and increased taxation revenues. Graduates also have higher levels of job satisfaction which is associated with other life outcomes, such as improved health, self-reported happiness, and life satisfaction.

One of the main ways in which the University supports its learning impact is by encouraging students to take part in internships, graduate programmes, and training programmes. Their purpose is to improve the employability of graduates through work-based learning and they are one of the main attractions of the University for prospective students. They represent a stand-out feature that sets the University of Surrey apart from other universities across England.

### 4.1 University of Surrey Graduate Outcomes

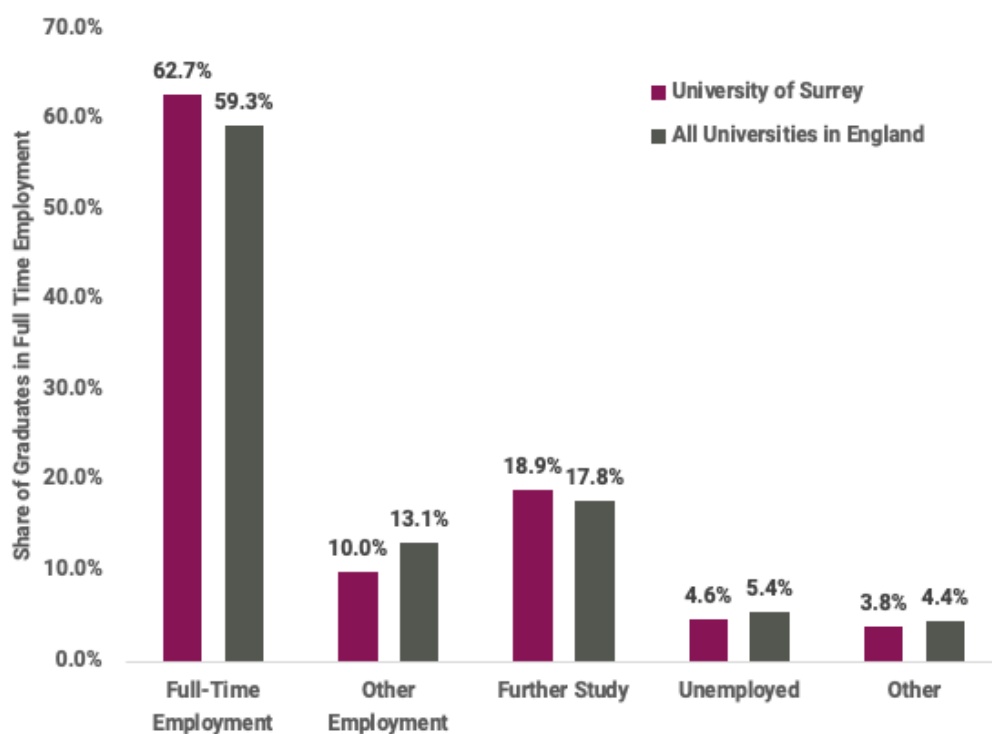
#### 4.1.1 Employment and Earnings Profile of Graduates

Those who earn a university degree have better outcomes in the labour market than those who do not, attaining higher levels of employment and higher levels of earnings among those in employment. This is especially true for graduates from the University of Surrey.

Graduates from the University of Surrey were more likely to enter the labour market in the years after graduating compared to all the universities in England as a whole. Of those who graduated from the University in 2019/20, 63% entered full-time employment, compared to 59% across the university sector on average. Proportionately more graduates from the University of Surrey also went on to further study than average for the English university sector, with 19% enrolling in further studies compared to 18% across all universities in England.



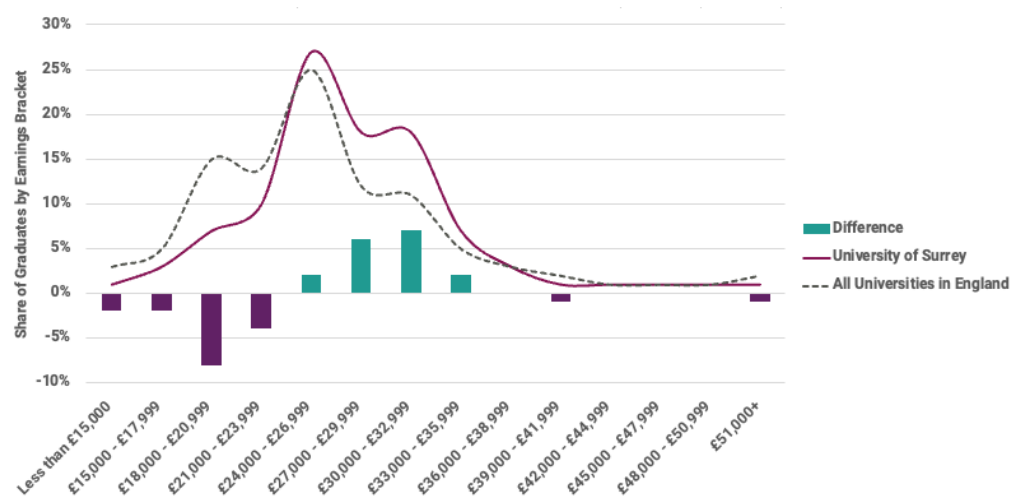
**Figure 4-1: Destination of Graduates from the University of Surrey, 2019/20**



Source: HESA (2023) HE Graduate Outcomes Data, 2019/20 cohort

The earnings profile of graduates from the University of Surrey is generally higher than for the universities in England as a whole. The average salary for graduates from the University of Surrey is £30,267<sup>12</sup> for those in full time work who earn above the minimum wage.

**Figure 4-2: Graduates Earnings Profile, 2019/20**



Source: HESA (2023) HE Graduate Outcomes Data, 2019/20 cohort

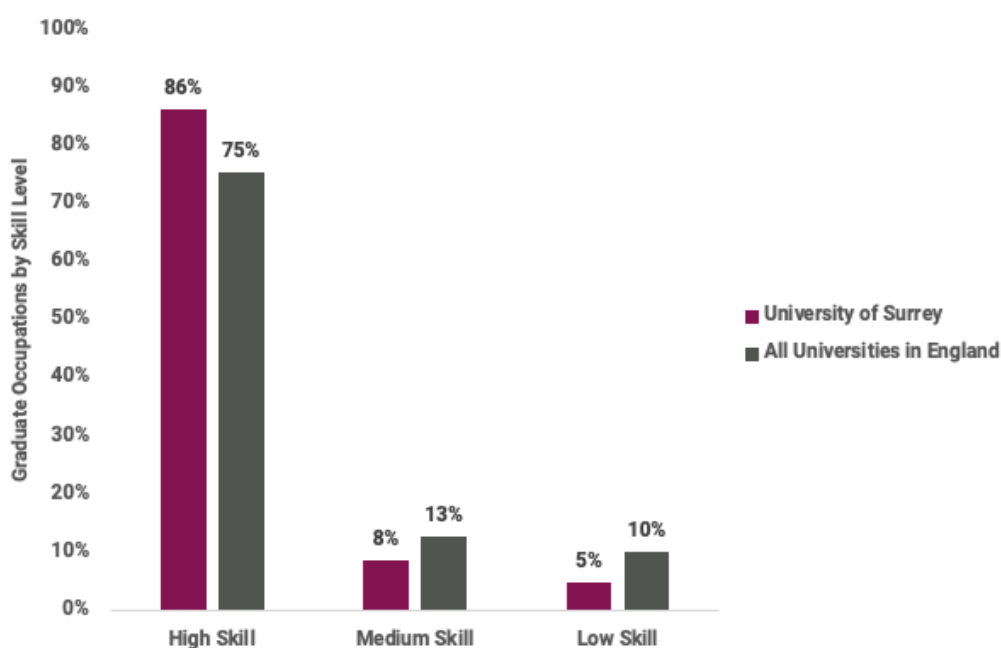
<sup>12</sup> University of Surrey (2022), Graduate Outcomes Report 2022.

Figure 4-2 shows the number of graduates across the income distribution comparing the University of Surrey to all the universities in England. Surrey graduates are slightly less prevalent at the high end of the income distribution and much less common at the low end of the income distribution. However, there are more graduates than average in the middle of the income distribution, which is likely a result of a high number of graduates in the healthcare sector.

#### 4.1.2 Occupational Level of Graduates

Graduates from the University of Surrey are also more likely to enter high skilled employment when they finish their studies: 86% of the University's graduates who entered full-time employment in 2019/20 took up high skilled jobs, compared to a 75% average for all graduates from universities in England<sup>13</sup>. Of those with a postgraduate research degree who attained full-time employment, 99% entered graduate level jobs. The graduate outcomes are even more positive for students at the University who undertook work placements during their studies. For this group, 97% went on to full-time employment or further study on completion of their course.

**Figure 4-3: Occupation Level of Graduates, 2019/20**



Source: HESA (2023) HE Graduate Outcomes Data, 2019/20 cohort

#### 4.1.3 Graduates by Employment Sector

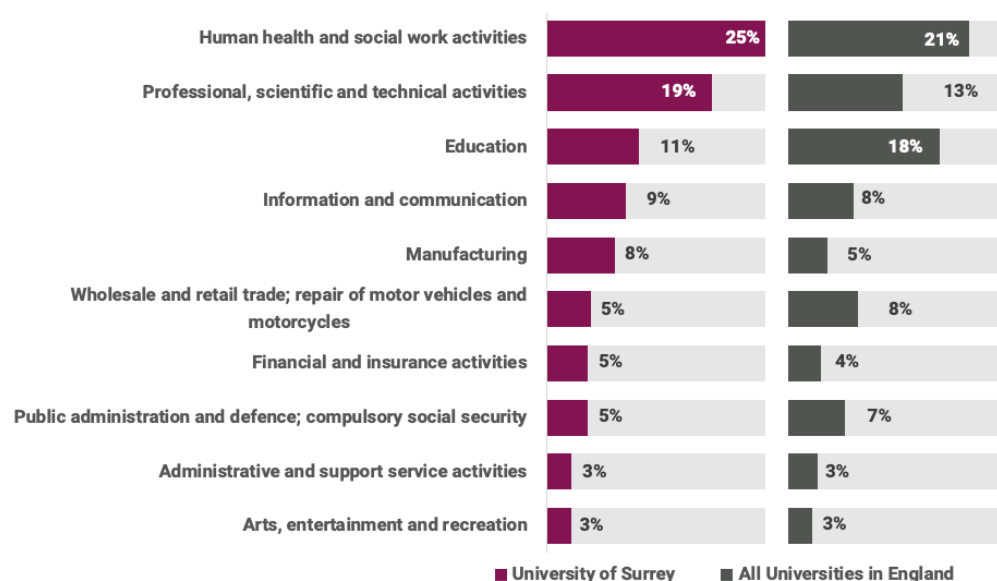
The employment sectors which graduates enter are shown in Figure 4-4. Human health and social work activities employs the highest proportion of graduates from both the University of Surrey, and from all English universities. For Surrey this is a particularly strong source of employment with 25% of the University's graduates entering the sector compared to a 21% average cross England as a whole. This is

<sup>13</sup> High Skill is defined as Standard Occupation Classification levels 1 – 3, Medium Skill are levels 4 – 6 and Low Skill are levels 7 – 9.

followed by professional, scientific, and technical activities which employs 19% of Surrey's graduates compared to 13% across all graduates from English universities.

Graduates from the University of Surrey are also much more likely to work in manufacturing (8%) compared to 5% across all graduates from English universities. In contrast, a lower proportion of Surrey's graduates are employed in the education sector compared to the average for all graduates from English universities.

**Figure 4-4: Sectors of Graduate Employment, 2019/20**



Source: HESA (2023) HE Graduate Outcomes Data, 2019/20 cohort

#### 4.1.4 Wellbeing Indicators

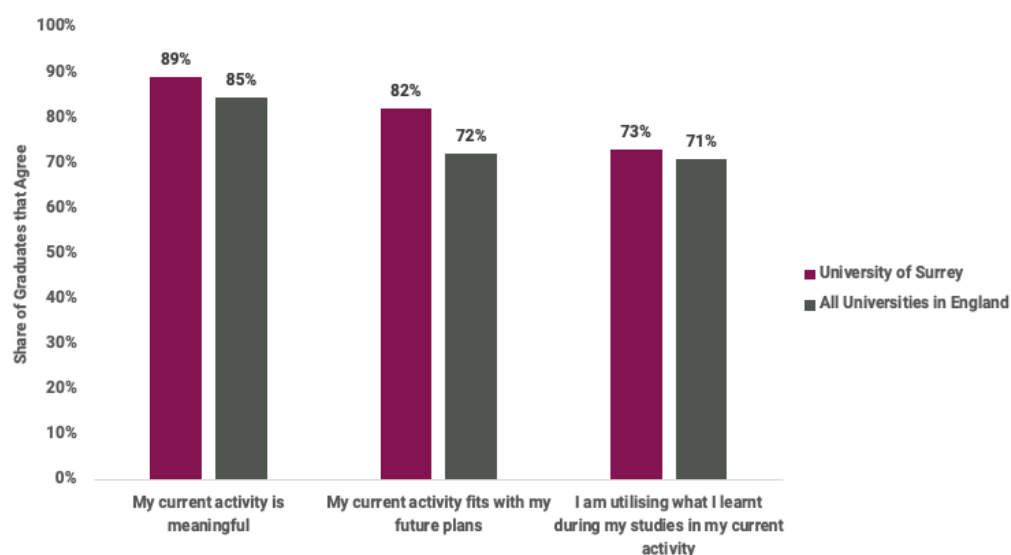
The ability of graduates to find meaningful and engaging employment is an important contributor to their wellbeing throughout their lives. A wide range of research<sup>14</sup> has found that a higher sense of meaning and purpose at work leads to improved professional outcomes, such as lower absenteeism, lower employee turnover and higher job satisfaction. It also leads to greater levels of self-reported happiness outside the workplace.

The Graduate Outcomes data suggests that graduates from the University of Surrey are highly likely to find meaning in their work when they enter the labour market. Some 89% of the University's graduates who were in full-time employment agreed with the statement "my current activity is meaningful", compared with an average of 85% for graduates from all universities in England. Additionally, the proportion of graduates from the University of Surrey who agreed with the statement "my current activity fits with my future plans" was 82%, greater than the average for England of 72%. Furthermore, the proportion of the University's employed graduates who agreed with the statement "I am utilising what I learnt during my studies in my current

<sup>14</sup> Steger, Michael. (2016). Creating Meaning and Purpose at Work. 10.1002/9781118977620.ch5.

activity” was 73%, which was also just ahead of the average for England as a whole of 71%.

**Figure 4-5: Perceptions of Employment and Wellbeing of Graduates, 2019/20**



Source: HESA (2023) HE Graduate Outcomes Data, 2019/20 cohort

## 4.2 Graduate Productivity Impact

There are three key dimensions to the lifetime productivity impact generated by graduates: their personal earnings premium, the corporate benefit from their higher levels of productivity and the fiscal benefit from the tax revenue they contribute to the government. Each of these aspects is considered below.

By undertaking their studies, graduates acquire skills which make them more productive than they would otherwise have been. The personal graduate premium this creates includes the additional earnings they can achieve from having their degree, plus the fiscal contribution they make to the Exchequer, less the costs they incurred in studying, which is largely accounted for by student loans.

Graduates are also more likely to be in employment than those who do not attend university. In 2017<sup>15</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 university. Although not quantified, the increase in labour market participation is also an economic benefit to the economy.

Firms that employ graduates are more profitable and can generate a greater economic impact than they would otherwise have done. The GVA and productivity

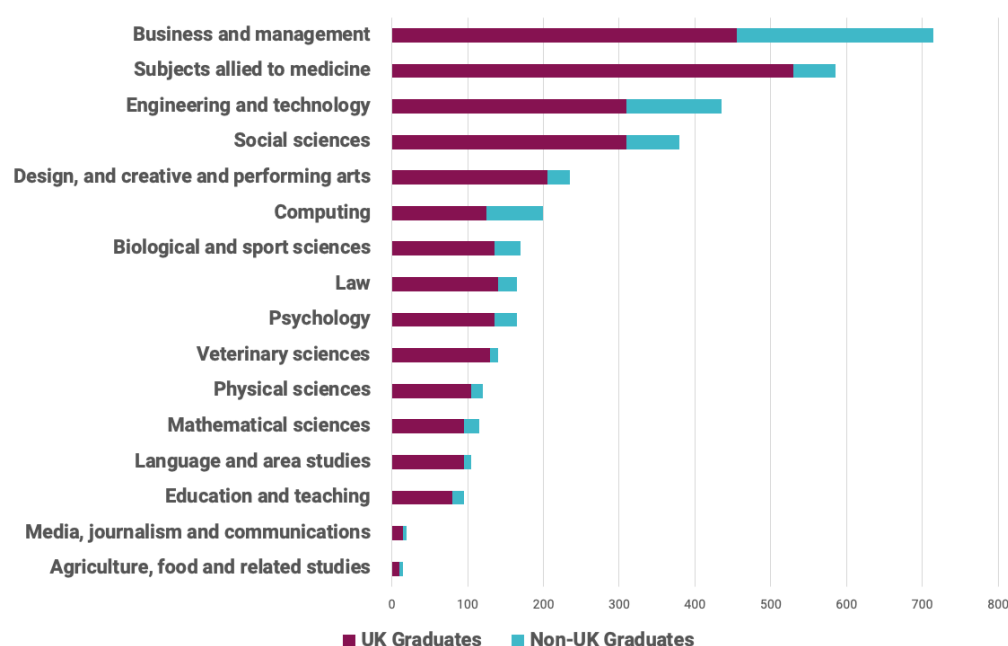
<sup>15</sup> ONS (2018) Graduates in the UK Labour Market 2017. \*These are the latest available data at UK level comparing graduates’ outcomes and outcomes for individuals with A Level qualifications.

gains they realise include the additional profits employers can 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 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. It is an underestimate of the total economic impact associated with increased graduate productivity as it does not include the corporate profit associated with each graduate.

The starting point in estimating the graduate premium associated with the University of Surrey was to consider the number of awards delivered. In 2021/22, the University of Surrey awarded 5,655 degrees. The majority (65%) of these were undergraduate degrees, followed by postgraduate taught degrees (32%) and postgraduate research degrees (4%).

**Figure 4-6 Number of Undergraduate Awards by Subject**



Source: University of Surrey

To estimate both the personal and the fiscal graduate premium from undergraduate degrees it was necessary to consider the number of awards by discipline. The estimate of personal graduate premium relies on data from discounted lifetime earnings from different degree types. These were sourced from a 2021 study by the Institute for Fiscal Studies (IFS) on the impact of undergraduate degrees on lifetime earnings<sup>16</sup>. This estimated discounted lifetime earnings across different types of universities, taking into account the background of students, including their sex,

<sup>16</sup> IFS (2021), The Impact of undergraduate degrees on lifetime earnings.

ethnicity, and participation of local areas (POLAR) status. The University of Surrey is also associated with graduate earnings which are higher than the average for all the universities in England, which is shown in Table 4-2

The average premium per graduate, for both personal returns and the benefits to the Exchequer as a result of obtaining an undergraduate degree are shown in Table 4-1 for the degree subject areas relevant to the University of Surrey. This shows that of the subject areas awarded by the University of Surrey, law is the subject linked with the highest earnings premium and highest benefit to the Exchequer for each undergraduate degree awarded. This is followed by mathematical sciences and business management.

**Table 4-1 Graduate Premium and Exchequer Impact by Subject per UG Award**

Degree Subject	Personal Premium	Exchequer Impact
Law	£177,000	£147,800
Mathematical sciences	£131,900	£113,300
Business and management	£123,500	£89,100
Engineering and technology	£104,600	£81,700
Computing	£94,600	£67,400
Education and teaching	£82,500	£29,600
Subjects allied to medicine	£64,100	£23,900
Veterinary sciences	£64,100	£23,900
Social sciences	£36,700	£5,100
Physical sciences	£36,400	£18,200
Media, journalism, and communications	£34,200	-
Psychology	£33,500	-
Language and area studies	326,500	£8,900
Biological and sport sciences	£25,800	£4,100

Source: BiGGAR Economics analysis of IFS data

The total undergraduate productivity impacts, including the personal graduate premium and the Exchequer impacts of this increased productivity, were estimated by multiplying the number of graduates by their respective premiums. In total this found that those who received an undergraduate degree from the University of Surrey in 2021/22 would earn at least £344 million over their lifetimes as a result of their education, of which £130 million would be paid in taxes to the Exchequer.



The economic impact from postgraduate awards was based on evidence from the ONS<sup>17</sup>. This found that the lifetime earnings associated with those holding postgraduate qualifications are 10% greater than for those with an undergraduate degree. To estimate the extra premium from a postgraduate degree, the undergraduate premium was then applied to the distribution of postgraduates by subject and weighted by 10%. In this way, it was estimated that the extra benefits (i.e. excluding those for also having an undergraduate degree) from being awarded a postgraduate degree at the University of Surrey was £8,700. This figure was then multiplied by the number of postgraduate awards to estimate the premium associated with postgraduate degrees. A similar approach was taken for fiscal impacts.

The geographic distribution of the graduate productivity impacts depends on where the graduates live and work. Data provided by the University of Surrey found that:

- 20% of graduates lived in the Borough of Guildford;
- 31% of graduates lived in the County of Surrey,
- 95% of graduates lived in the UK; and
- 5% lived outside the UK.

In this way, the total graduate productivity impacts were estimated to be:

- £74 million from graduates living the Borough of Guildford;
- £117 million from graduates living the County of Surrey; and
- £356 million GVA from graduates living in the UK.

**Table 4-2: Productivity Impacts of Graduates of the University of Surrey**

Source of Impact	Guildford	Surrey	UK
Graduate Productivity	46	73	221
Exchequer Impact	28	44	135
<b>Total</b>	<b>74</b>	<b>117</b>	<b>356</b>

Source: BiGGAR Economics Analysis, note totals may not sum due to rounding

<sup>17</sup> ONS (2019), Human capital estimates in the UK: 2004 to 2018, available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/articles/humancapitalestimates/2004to2018>



Graduate  
**Futures**

# Graduate Futures Programme

The University of Surrey launched the Graduate Futures Programme in April 2022, granting final year undergraduates the opportunity of a 12-month internship within the University

The Graduate Futures Programme was created in response to the Covid-19 pandemic which reduced the appetite of students to go on work placements. It was designed to improve the employability of graduates through work-based learning, and to provide an opportunity for students who would not have otherwise secured a placement elsewhere.

It is a one-year, paid employment opportunity within various departments across the University, including:

- finance;
- human resources;
- public affairs; and
- international student support.

Throughout the year, students have access to a bespoke professional development programme, which includes workshops, career development services, training to develop leadership and management skills, and opportunities for networking.

It is hoped that the Programme will help to recover the number of students going on placements to pre-pandemic levels. It is also hoped that the Programme will help to retain talent within the University with some students being granted permanent employment at the University after graduating.

Evaluation of Graduate Futures Programme is still ongoing, but initial indications are that it has been positive and many participants have thrived during their placements.

## 4.3 Student Placements

Placements provide students with an opportunity to develop skills in the workplace and allow businesses to benefit from the knowledge that students have acquired during their studies. They also support students to gain valuable experience which can help with positive graduate outcomes on completion of their studies.

In 2021/22 900 students undertook placements at the University of Surrey. Based on a post-code analysis of data from the University in the previous study, it was estimated that 8% of these placements were within Guildford, 17% were within Surrey and 81% were across the UK.

To estimate the impact generated by students on placement, it was first necessary to estimate the number of weeks that students carried out in placements across different economic sectors where they were employed. The total number of weeks was then adjusted by 33%, as it was assumed that students on placements would be less productive than an average worker. The total number of weeks was also divided by the average number of weeks worked by sector to estimate the direct employment supported by students' placements. Direct GVA was then estimated by applying the relevant GVA per job ratio. Indirect impacts were estimated in a similar way as in previous chapters and induced impacts were not considered to avoid double-counting student spending.

In this way, it was estimated that, in 2021/22, students on placements generated £26 million GVA for the UK economy and supported 380 jobs.

**Table 4-3: Student Placements Impact**

	Guildford	Surrey	UK
GVA (£m)	2	4	26
Employment	30	60	380

Source: BiGGAR Economics Analysis

## 4.4 Summary Learning Impacts

It was estimated that in 2021/22, graduates from the University of Surrey generated £382 million GVA for the UK economy and supported 380 jobs.

**Table 4-4: Summary Learning Impacts**

Source of Impact	Guildford	Surrey	UK
GVA (£ million)			
Graduate earning premium	46	73	221
Fiscal impact	28	44	135
Student placement impact	2	4	26
<b>Total</b>	<b>76</b>	<b>121</b>	<b>382</b>
Jobs			
Student placement impact	30	60	380
<b>Total</b>	<b>30</b>	<b>60</b>	<b>380</b>

Source: BiGGAR Economics Analysis

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## 5. Knowledge Exchange

The University of Surrey has a culture of delivering applied, industry focused research. The economic impact of this is reflected in the value of industrial collaboration and commercialisation activity.

In common with all universities, a core purpose of the University of Surrey is to generate knowledge, but knowledge only generates economic impact once it is applied in a practical setting. The process through which this occurs is known as knowledge exchange. It covers a broad spectrum of activities designed to move knowledge out of the laboratory or classroom and into the wider world.

One of the main ways in which this occurs is when students move out of the education system and into the workplace, taking with them the accumulated knowledge they have gained during their studies. The impacts of this were considered in the previous chapter. Beyond this there are two other main mechanisms through which knowledge is translated into economic impact:

- Collaboration with industrial partners, including:
  - formal collaborative research and consultancy;
  - the provision of continued professional development;
  - access to facilities and equipment; and
  - formal Knowledge Exchange Partnerships.
- Commercialisation of intellectual property, including:
  - staff and student start-ups and spin-offs; and
  - intellectual property licencing.

This chapter quantifies the economic benefits of these activities.

### 5.1 The Foundations of Knowledge Exchange

Over the years the University of Surrey has built a strong reputation for delivering industry focused research. This has enabled research and professional staff to develop close relationships with industry and supported the development of an organisational culture that is highly focused on industry needs. This is complemented by equally strong relationships with important institutional partners such as the Surrey Hospital, Pirbright Animal Health and the National Physical Laboratory, all of which provide alternative routes for the practical application of research.

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Taken together these relationships help to sustain a highly collaborative culture that fundamentally underpins the University's knowledge exchange efforts.

Relationships between academic staff and industrial partners are regularly leveraged to inform both curriculum design and research strategy, helping to ensure the continued relevance of the University's teaching and research outputs. Relationships between industry and professional staff are similarly important for identifying and responding to industry needs in relation to research and skills training. These relationships also enable the University to play a proactive role in anticipating future industry trends and developing appropriate support services in response.

Building on this tradition, since 2020 the University has pioneered the use of pan-university research institutes as a vehicle for supporting knowledge exchange.

#### **5.1.1 Pan-University Research Institutes**

The vision behind this approach was to identify how the University's existing research strengths could be brought together to help address key strategic challenges facing the UK/Global economy. The approach recognises that the complex nature of these challenges will require multi-disciplinary solutions and seeks to address this by bringing together complementary research expertise from across the University.

To date two new pan-university research institutes have been established relating to people centred artificial intelligence and sustainability. These institutes are not physical entities (although each does have dedicated collaboration space) but rather organisational structures for bringing academic expertise from across the University together with industry partners to work on practical research challenges.

The overarching research objectives for each Institute are set by the University and relate to one or more of the University's grand research challenges and strategic themes. Each Institute is supported by a dedicated Partnership Manager whose role is to create connections with industry and help generate ideas for joint projects.



# Institute for People-Centred AI

## Launched in 2021 the Institute for People Centred AI puts people at the heart of Artificial Intelligence

Artificial Intelligence (AI) has the power to change how people live, work and socialise and is increasingly affecting every area of research from healthcare to law.

The newly formed Institute for People-Centred AI at the University of Surrey brings together world-leading AI and domain expertise from across the University to realise and shape its influence for the public good. Its vision is to become the national centre of excellence in people-centred AI research, training and innovation and to influence how this can be applied for the benefit of society. It is based on the belief that the starting point for AI should be people rather than technology and it focuses on five grand challenges:

- trustworthy and responsible AI;
- AI for education, information and entertainment;
- AI for health and wellbeing;
- human AI interaction; and
- AI for society.

The Institute is pan-university in nature, bringing together core AI-related expertise in vision, speech and signal processing, computer science, and mathematics, along with its domain expertise across engineering and the physical sciences, human and animal health, law and regulation, business, finance and the art and social sciences. This is important for developing AI in a sustainable and ethical way which takes the needs and considerations of a broad spectrum of society into account.

The newly created AI Centre is also an asset for the video gaming industry which has a strong local presence throughout Surrey and around Guildford in particular. It is actively inviting local game developers to engage with its research teams to enhance the development of next generation game environments, giving them a leading edge, which could support the industry's growth.

## 5.2 Commercial Research Support Services

The outcome of collaborative research is highly uncertain. The benefits generated are rarely exactly as expected and will often not lead directly to tangible commercial returns. That is the nature of research. But this report focuses explicitly on economic



benefits and to do this it is necessary to identify the sub-set of total collaborative activity that can reasonably be expected to lead to tangible economic benefits.

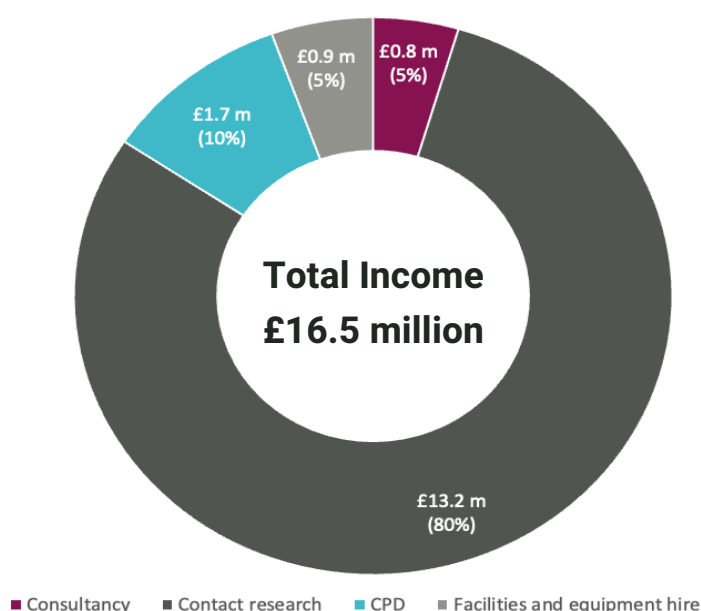
To do this the analysis focuses specifically on the commercial research services the University provides for research partners<sup>18</sup>. These services include:

- contract research;
- the use of facilities and equipment;
- provision of continuing professional development for staff; and
- consultancy.

The rationale for focusing on these services is that because they are generally commissioned only once the intellectual property involved is at or near market readiness there is a reasonably high level of confidence that they will lead to tangible commercial returns. This confidence is reflected in the fact that such services tend to be directly commissioned and paid for by research partners.

In 2021/22 the University of Surrey generated a total of £16.5 million from delivering commercial research services. Most of this income (80%) was generated through contract research. CPD courses generated a further 10% while hiring facilities and equipment and undertaking consultancy generated 5% each.

**Figure 5-1: Income from Commercial Research Support Services, 2021/22**



<sup>18</sup> The University's commercial research partners include commercial businesses, public and third sector bodies. It is appropriate to include all three types of organisation because although the public and third sector bodies do not generate commercial profits, research projects still have the capacity to improve their productivity, for example by helping to improve their service offering or reduce their costs and as such often have the potential to generate economic impact.



## SME Innovation Vouchers

The University has developed many mechanisms to facilitate collaboration with industry. One of these is innovation vouchers, which often provide a starting point for long lasting collaborative relationships.

The University's SME Innovation Voucher Scheme funds innovative, collaborative projects between small and medium-sized enterprises and its academics. It offers the potential for new partnerships and identifies opportunities for collaboration.

Each Voucher fully covers the cost of the services provided by the University and is valued at between £5,000 and £10,000 although projects requiring larger amounts may be considered. SMEs can use the vouchers to access academic expertise and state-of-the-art facilities, explore the complex challenges they are facing, drive product innovation and accelerate growth.

The academic offering covers a wide range of disciplines within business, innovation and social sciences; engineering and physical sciences; and health and medical sciences. To be eligible, applicants must be established, revenue-generating, UK-based small or medium-sized business who can demonstrate innovation and growth potential.

One example of a recent project supported through the programme was research into treatment strategies for single-use plastic waste on behalf of LabCycle, a company specialising in the recycling of single-use plastics from research labs. Another recent project was an analysis of the social and economic impact of the arts in Surrey undertaken on behalf of local arts venues.

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### 5.2.1 Returns to Research Collaboration

The value of collaborating with the University will vary considerably between projects, depending on the type of work done, the stage in the development process the project relates to and the capacity of the company to absorb the research outputs. However, to quantify this impact, it is necessary to derive an estimate for what this value would be for a "typical" research partner. This can be done by considering evidence from evaluations of similar projects elsewhere.

One such evaluation was undertaken by BiGGAR Economics of Interface, the agency responsible for brokering relationships between businesses (and other

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organisations) and universities in Scotland<sup>19</sup>. The connections made by Interface 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 were £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 comparable studies. For example a study for the (then) Department of Business, Enterprise & Regulatory Reform<sup>20</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 is broadly consistent with the level of returns estimated by BiGGAR Economics earlier work.

### **5.2.2 Impact of University of Surrey Research Services**

Based on this evidence it was therefore assumed that the services the University of Surrey deliver for businesses would generate commercial returns of 340%. Basing this assumption on the lower end of the range identified in the evaluation evidence provides a high degree of confidence in the resultant impact but means that the value is likely to be conservative.

By applying this assumption to the total income generated by the University from research services in 2021/22 it was estimated that these services generated £123 million GVA and supported 360 jobs across the UK. The geographic split of this impact was estimated using data provided by the University for the previous study on the location of research customers.

### **5.2.3 Knowledge Transfer Partnerships**

Alongside the formal research support services the University provides for businesses, academics at the University regularly participate in formal Knowledge Transfer Partnerships (KTPs). These projects are part of the UK KTP programme run by UK Research and Innovation, which is a long-standing part of the UK innovation landscape.

The objective of the programme is to provide businesses with relevant academic expertise to deliver business led innovation projects. KTPs involve an academic research partner working with a business to develop a project and the recruit a

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<sup>19</sup> BiGGAR Economics (2013), Evaluation of Interface, the knowledge connection for industry.

<sup>20</sup> PriceWaterhouseCoopers, Impact of RDA spending – National report – Volume 1 – Main Report, March 2009, DBERR.

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suitable graduate (known as an “associate”) to deliver it. The associate then works within the business to deliver the project.

The KTP programme has been operating since 1975 and over this period good quality evaluation evidence<sup>21</sup> has been collated demonstrating the value of these projects. This evidence suggests that completed KTP projects in the South East of England generated a total of £0.7 million GVA over a six year period. The evidence also suggests that the typical KTP supports three jobs.

Data published by UK Research and Innovation shows that over the past 6 years academics at the University of Surrey have completed 23 KTP projects. The evaluation evidence described above suggests that these projects generated £3 million GVA and supported around 70 jobs across the UK economy.

## 5.3 Commercialisation

Another important way in which research emerging from the University of Surrey is translated into economic activity is through commercialisation. Typically this occurs in one of two ways: by the University licencing the use of intellectual property developed by staff to existing companies or by students and staff establishing new spin-out companies to exploit ideas emerging from their research/studies. This section considers the economic impact arising from both types of activity.

### 5.3.1 Spin-off Companies

In 2021/22 there were 12 active staff start-up companies associated with the University of Surrey and the University owned equity in a further 18 spin-off companies. There were also a further seven spin-off companies that the University no longer held any shares in.

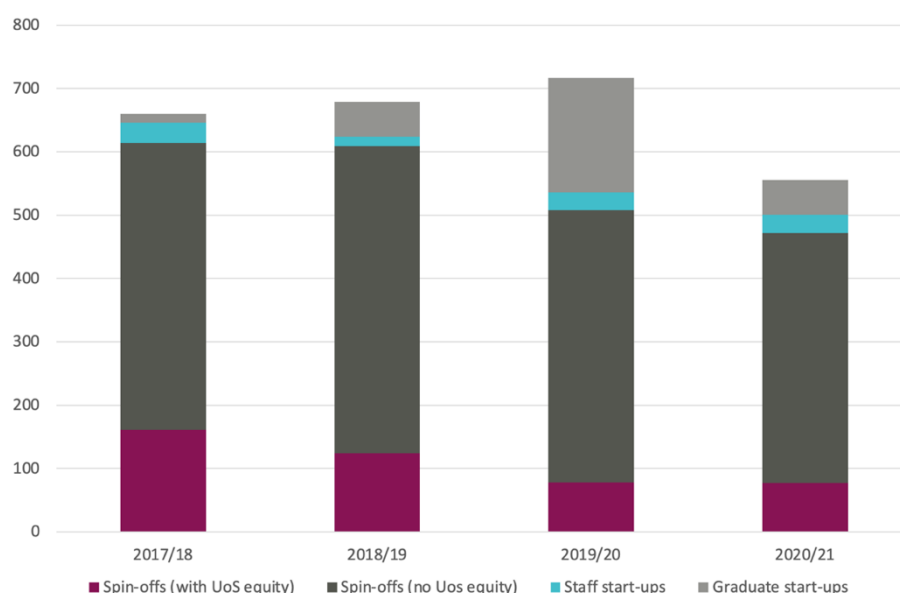
Figure 5-2 illustrates how employment in University start-ups and spin-offs has changed since 2018/19. It shows that overall employment has fallen by around 40% (from around 660 to around 400 in 2021/22). However, despite this over the same period the estimated turnover of University spin-outs and start-ups has increased by around 16% (from £72.8 million in 2018/19 to £84.6 million in 2021/22). This may reflect the growing maturity of young businesses as they transition from the early-stage their development, during which costs are typically high in relation to revenues, into more mature, established businesses.

Another notable characteristic of the data is the substantial increase in employment in graduate start-ups recorded in 2019/20. This period coincided with the start of the lockdowns introduced to tackle the Covid 19 pandemic (which began in March 2020) and may reflect graduate responses to the reduction in more traditional employment opportunities at that time.

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<sup>21</sup> Regeneris Consulting (2010), Knowledge Transfer Partnerships Strategic Review.

**Figure 5-2: Estimated Employment in University of Surrey Spin-off Companies**



Source: Higher Education Business and Community Interaction Survey

The starting point for estimating the economic impact of University spin-offs and start-ups was to estimate the total direct GVA generated by these businesses. This was done by applying GVA/employee ratios for the sectors in which the businesses operate to the total number of jobs supported by these businesses. Appropriate multipliers were then applied to account for second round spending effects. The proportion of the impact occurring in each study area was estimated based on the information about the location of the businesses concerned.

In this way it was estimated that University of Surrey start-ups and spin-offs generated £48 million for the UK economy and supported a total of 870 jobs.

Perhaps one of the best known and most successful of the spin-off companies to have emerged from the University of Surrey is Surrey Satellite Technology, a description of which is provided below.



# Surrey Satellite Technology

This multi award-winning spin-out from the University has grown over the last 40 years to support 750 full-time jobs and create £67 m in GVA each year in the UK

Surrey Satellite Technology Ltd (SSTL) was created in 1985 as a spin-out company of the University and is based on Surrey Research Park. It began as a research project to build a modern, re-programmable small satellites and it showed that relatively small and inexpensive micro satellites could be built quickly to perform successful and sophisticated space missions. The company grew steadily over time, working with a wide range of international customers and partners. During its first three decades it built and launched around 70 satellites for 22 countries.

Airbus bought the majority shareholding in SSTL from the University of Surrey in 2009 and the company is now a wholly owned subsidiary of Airbus.

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**“SSTL pioneers audacious new satellite technologies, products and services and shares its know-how to enable advancement in space.”**

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SSTL offers end-to-end capability for satellites and delivers space training for its customers. It currently operates 14 satellites from its spacecraft operations centre and delivers a significant impact in the UK’s satellite technology sector. In 2020, it was estimated that SSTL:

- directly employed 363 people;
- indirectly supported a further 141 full-time jobs through supply chain spending of £11 million across 535 suppliers who are mainly SMEs;
- induced a further 252 jobs in the UK through employee and supplier spending; and
- created £67 million GVA towards UK GDP and raised £9 million in taxes for HMRC.

The company has won multiple awards over many years for its pioneering products and services. Its original lead researcher, Martin Sweeting, was knighted in 2002 in recognition of his pioneering work on cost-effective spacecraft engineering. He has continued to receive multiple awards from international sources since then.

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### 5.3.2 Licensing

The other important way in which the University of Surrey commercialises intellectual property is through licencing agreements with businesses and other organisations. These agreements enable the holder to make use of intellectual property developed within the University to support commercial objectives such as increased sales, improved productivity, greater efficiency or new product/process innovation, each of which would help generate economic activity.

In 2021/22 the University generated £0.4 million in licencing income. This is significantly lower than the £0.6 million generated from this source in 2018/19 but is likely to reflect the impact of the Covid 19 pandemic which substantially closed down many parts of the economy for extended periods. It should however also be noted that the income generated from licencing activity in 2021/22 was 25% higher than the income generated the previous year, indicating that this area of activity may now be starting to recover.

To estimate the economic impact stimulated by licence agreements it is first necessary to estimate the value of additional turnover businesses will be able to generate as a result of holding them. The value of licencing income, or royalties generated by licences, provide a starting point for doing this.

The amount of royalties paid for an individual licence depends on the details of the licensing agreement and this can vary considerably from company to company. Before agreeing a licensing deal, negotiators must first form a view of how much the IP is worth to the prospective licensee. The '25% rule' is a general rule of thumb that can help to do this. It is based on an empirical study first undertaken in the 1950s and updated in 2002, which 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>22</sup> analysed the returns by industry and found that the royalties rate varied around the '5% rule' between 2.8% and 8.0%.

By applying an average royalty rate of 4.9%, based on the Goldscheider analysis, it was possible to estimate the increase in turnover that these technologies generate. This turnover was then converted into GVA and employment through appropriate ratios and multiplier effects.

In this way, it was estimated that through its licencing activity the University of Surrey generated £1 million GVA and supported 10 jobs across the UK.

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<sup>22</sup> Goldscheider et al, Use of the 25 Per Cent Rule in Valuing IP, December 2002.

## 5.4 Knowledge Exchange Summary

The evidence presented in this chapter shows that the University of Surrey is very active in the field of knowledge exchange. It has a stock of spin-out enterprises that includes a healthy mix of substantial, mature businesses and a steady stream of new start-ups and its business service offering is well-developed and expansive. This activity is underpinned by a well-established culture of delivering applied, industry focused research. Although the volume of activity delivered in some areas was somewhat lower in 2021/22 than in 2018/19, this is likely to be a consequence of the Covid 19 pandemic and there are some signs that some areas of activity (e.g. licencing) may now be recovering.

Taken together it was estimated that the knowledge exchange activities considered in this chapter generated £172 million for the UK economy in 2021/22 and supported a total of 1,250 jobs. This impact is summarised in Table 5-1.

**Table 5-1: Summary Knowledge Exchange Impacts**

Source of Impact	Guildford	Surrey	UK
GVA (£ million)			
Commercialisation	29	34	49
Research support services	19	43	123
<b>Total</b>	<b>48</b>	<b>76</b>	<b>172</b>
Jobs			
Commercialisation	530	610	880
Research support services	40	100	360
<b>Total</b>	<b>580</b>	<b>720</b>	<b>1,250</b>

Source: BiGGAR Economics Analysis



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## 6. Medical Research

Medical Research generates both health and economic benefits. Not all these benefits can be quantified but those that can are substantial.

The University of Surrey is well regarded for the quality of its health-related research. It ranked 6<sup>th</sup> in the 2021 UK Research Excellence Framework for research power for health professionals<sup>23</sup> and has a strong track record of working with and on behalf of national charities, research councils, other universities and research institutes.

### 6.1 Medical Research at the University of Surrey

In 2021/22 the University secured a total of £10.3 million funding for medical research, a 10% increase since the previous study. This funding covered a wide variety of different types of projects including those designed to:

- improve knowledge and understanding of pathogens and diseases;
- support the development of new pharmaceuticals treatments, therapies and diagnostic approaches;
- increase understanding of the interactions between human and animal health;
- enhance health care practice; and
- improve understanding of human physiology and psych-social aspects of health.

The medical research funding received by the University covered nearly 270 individual projects and programmes ranging in size from under £1,000 to over £0.5 million. Amongst the largest individual awards received related to the University's work on animal health.

This is highly relevant to human health because animals and people are affected by many of the same diseases, including some that can spread between species. The Covid19 pandemic that swept the globe in 2019/20 is a well-known example of this and vividly illustrates why understanding animal health is so important for human health and wellbeing.

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<sup>23</sup>University of Surrey website, accessed January 2023

<https://www.surrey.ac.uk/research/excellence/research-excellence-framework-2021>



# Collaborating for One Health

In 2020/21 the University of Surrey secured more than £0.5 million as part of the One Health European Joint Programme (EJP).

The One Health concept recognises that human health is closely connected to the health of animals and the environment and that the study of infectious agents that may cross species and environmental barriers is imperative.

The One Health EJP was launched in 2018 with the aim of integrating and coordinating the research programmes of public health, animal health and food safety institutes. The partnership consists of 44 partners from acclaimed medical, veterinary and food laboratories across Europe.

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**“The One Health EJP is a landmark partnership consisting of 44 partners from acclaimed medical, veterinary and food laboratories across Europe.”**

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As part of this programme researchers from the University of Surrey’s School of Veterinary Medicine are carrying out interdisciplinary research that aims to address the global threats of foodborne diseases, antimicrobial resistance and emerging infectious diseases. This research includes an array of projects as well as several PhD studentships, education and training activities, workshops and events.

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## 6.2 Quantifying the Value of Medical Research

While the full value of health and medical research cannot be quantified, attempts have been made to quantify aspects of its economic impact. For example, research by the Wellcome Trust on the value of medical research in the UK considered two types of return: health gains (net of the health care costs of delivering them) and economic gains<sup>24</sup>. This section considers the value of both.

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<sup>24</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.

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### 6.2.1 Health Gains

The value of health gains was assessed by the Wellcome Trust using the quality adjusted life years (QALY) method<sup>25</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%.

To apply these IRRs to the medical research undertaken at the University of Surrey, 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 £10.3 million income for health and medical research received by the University of Surrey would have a total impact of around £11.8 million over the next twenty years across the UK. The impact in Guildford and Surrey were assumed to be proportional to the size of their population.

### 6.2.2 Economic Gains

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 found that there is a range of estimates for the IRR for GDP impacts. The lowest estimate for IRR was 20% and the highest was 67%. The best estimate given was 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 was assumed to apply to all types of medical research. This implies that, every £1 invested in medical research results in £0.30 in GDP each year in the UK in perpetuity.

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<sup>25</sup> Ibid.

As with the previous calculation, the Net Present Value (NPV) of medical research on GDP was estimated by applying the Treasury discount rate of 3.5% over a 20-year period. In this way it was estimated that medical research undertaken at the University of Surrey would generate £44.1 million economic gains across the UK. This impact was assumed to be proportionate to the population of each study area.

### 6.2.3 Total Returns to Health and Medical Research

Taken together the social and economic returns to medical research undertaken by the University of Surrey in 2020/21 amount to £56 million across the UK economy.

**Table 6-1: Returns to Health and Medical Research**

	Guildford	Surrey	UK
GVA (£ million)	<1	1	56

Source: BiGGAR Economics Analysis

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## 7. Innovation Support Impacts

The University of Surrey has an impressive track record of supporting business growth that has been instrumental in the emergence and growth of important sectors of the Surrey economy.

The previous two chapters focused on the ways in which the University of Surrey moves knowledge out of the lab and into industry, but good ideas alone are no guarantee of future business performance. To make effective use of these ideas businesses also need the capacity to absorb them. Helping businesses develop this capacity and supporting their ongoing growth is an important part of the University's wider service offering and has been instrumental in supporting the development of a number of successful sectors of the Surrey economy.

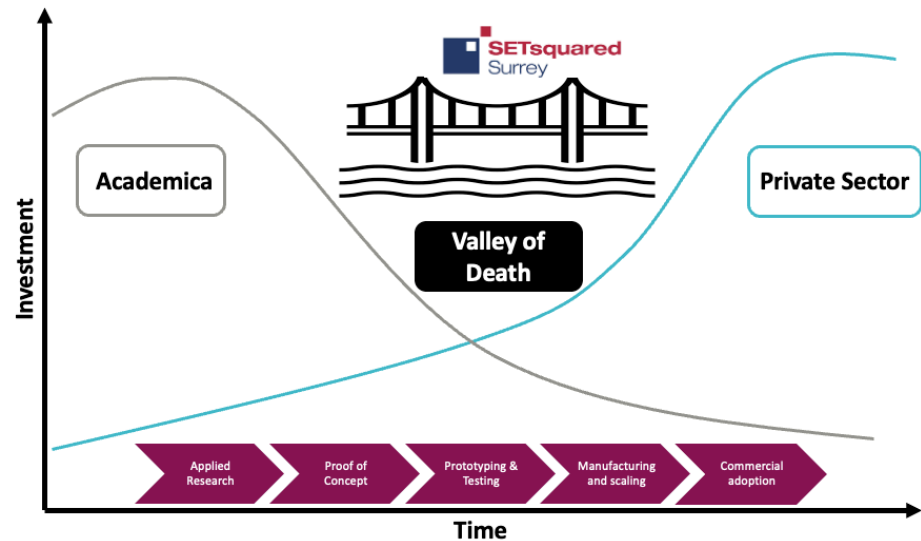
To understand the role the University plays in supporting business development it is helpful to consider the types of support provided at three key stages of business development: start-up and incubation, early-stage growth and maturity. This support is provided through numerous projects, programmes and initiatives. This chapter considers the role of three of the most important of these:

- SETsquared Surrey;
- the S100 Angel Investment Club; and
- the Surrey Research Park.

### 7.1 Start-up and Incubation

Section 5.3.1 of this report described how one of the important ways in which knowledge from the University of Surrey is embedded in the real economy is through the creation of new start-up and spin-off companies. However, establishing a new knowledge intensive company is only the start of what is often a long and difficult journey. During this journey the new business must successfully navigate the transition from public research funding to commercial investment. Many new businesses are unable to complete this transition, leading commentators to label it "the valley of death" (see Figure 7-1)

**Figure 7-1: Valley of Death for Knowledge Start-ups**



The University of Surrey has a long track record of supporting businesses through this transition. This track record is largely built on the highly acclaimed SETsquared Surrey.

#### 7.1.1 SETsquared Surrey

SETsquared Surrey is the business acceleration centre of the University of Surrey. It is part of the SETsquared Partnership of centres across the south of England (Bath, Bristol, Cardiff, Exeter, Southampton and Surrey) and is part of the globally recognised SETsquared innovation ecosystem.

The incubator has been situated on the Surrey Research Park since its inception in 2002. Originally called 'The SETsquared Business Hatchery', the incubator provided office space and meeting rooms along with the necessary technological and management expertise to determine the feasibility of a business idea. In 2002, the incubator was one of only a handful of incubators set-up in the UK. Now in its 20th year, it has supported more than 280 companies and boasts a business survival rate of 80%. The team responsible has also helped companies to raise over £165 million of investment over this period.

SETsquared Surrey provides businesses with access to low-cost, flexible office space, access to experienced in-house advisors and external mentors as well as taking them through a 4-stage incubator programme which consists of:

- **balanced Start-Up Review:** an in-depth meeting with business experts to benchmark the current stage of a business.
- **entrepreneur's Programme:** highly facilitated workshops to develop a Business Model Canvas of the business.
- **business Skills workshops and clinics:** from a suite of monthly sessions to enhance business acumen and improve business performance; and
- **investment Readiness Training:** to prepare a business for funding.

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The SETsquared Surrey approach has been developed and refined continuously over two decades of operation and is now widely recognised as a world leading exemplar of good practice. In 2019 it was identified as the best university business incubator in the world in the UBI Global Rankings, an international benchmark series covering more than 360 incubators in 82 countries around the world.

### **7.1.2 The Economic Impact of SETSquared Surrey**

In 2021/22 the businesses based in the SETSquared Surrey Incubator generated turnover of around £8.1 million, significantly lower than the £12.4 million turnover reported in 2020. It is likely that this change reflects the impact of the pandemic.

However, the recent changes in reported turnover have not translated into a proportionate fall in employment. In 2022 Incubator tenants reported that they employed a total of 270 staff, just 20 jobs fewer than reported in 2020. This suggests tenants have adapted reasonably well and shown significant resilience.

The starting point in estimating the economic impact of SETsquared Surrey was to estimate the gross economic impact of all tenants. Appropriate multipliers were then applied to account for second round spending effects. It was then necessary to adjust this impact to reflect the value added by the University. To do this it was necessary to take account of two factors:

- the different levels of support received by physical and virtual tenants; and
- any double counting that could arise due to tenants that are also spin-off (the impact of which was considered in chapter 5.)

To do this it was assumed that 25% of the impact associated with virtual tenants and 50% of the impact generated by physical tenants could be attributed to the University. These assumptions are consistent with previous economic impact assessments undertaken for the University by BiGGAR Economics.

In this way it was estimated that in 2022 tenants of the SETsquared Surrey Incubator generated £3 million GVA for the UK economy and supported around 120 jobs that could be attributed to the University of Surrey.

### **7.1.3 Customising the Business Support Offer**

Over the years professional staff at the University of Surrey's have developed substantial experience in delivering a wide variety of support services for new and growing enterprises. During this time there has been considerable experimentation and innovation. Different models being developed, tested, refined and then reapplied in what has become a constant process of continuous improvement.

As professional expertise in delivering this kind of support has developed the University has become adept at adapting general support models to meet the needs of different sectors. This can be particularly important for supporting the development of emerging sectors where the region may have latent but unrealised potential. A good example of this is the work currently ongoing to realise the potential of Surrey's growing animal health sector.



## Animal Health Innovation

Surrey is home to a growing cluster of animal health expertise. The University aims to support the growth of this important sector through two important initiatives.

vHive is an innovation hub dedicated to the development and adoption of new digital technologies in animal health. The Animal Health Innovation Network is a public-private partnership brought together to tackle issues such as animal-to-human virus transmission, antimicrobial resistance, sustainable food supply and pet welfare.

Both initiatives are examples of how the University is applying its expertise in sector support to help realise Surrey's latent strength in animal health.

Situated at the University of Surrey's School of Veterinary Medicine, vHive is made up of both academic and commercial experts who have expertise necessary to carry out new, complex endeavours on behalf of their partners who require academically verified output and bespoke business development. It aims to help bridge the technology readiness level gap between the world's leaders in animal health and to lead the development and application of transformational digital and data analytics tools to advance the wellbeing of animals for the benefit of society.

The Animal Health Innovation Network involves the University of Surrey and the local enterprise partnership, Enterprise M3, along with local centres of excellence such as The Pirbright Institute, the Animal and Plant Health Agency, the Veterinary Medicines Directorate and Sparsholt College. Industry partners including Zoetis, the global animal health company, are also involved. It is hoped that bringing together this concentration of expertise and infrastructure could bring disruptive innovation in digital, data analytics, diagnostics, biodevices, vaccines and overall control of animal infectious diseases.

The Surrey and Hampshire region contains a growing number of high-tech animal health businesses and organisations and has been designated as a High Potential Opportunity area for international investment by the Department for International Trade. Through initiatives such as these the University aims to support the development and growth of this important sector for the benefit of the region and the wider UK economy.



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## 7.2 Business Growth

Beyond the initial start-up phase, the University of Surrey also provides a range of targeted support designed to help SMEs to grow. This includes general capability programmes designed to help businesses develop the skills they need to grow as well as targeted support to help them access the finance they need to do this.

Attracting private finance to support ongoing growth is a major challenge for most new spin-off companies. Entrepreneurs are usually expected to be able to demonstrate that they have some funding in place as a pre-condition for attracting further investment. Usually this is done by using personal savings and/or borrowing from friends and family but with a typical investment amounting to around £50,000, this can be a significant barrier for many would be entrepreneurs.

When establishing a new company is the best way of taking forward an idea the University of Surrey has a track record of providing up-front investment in businesses to enable individuals to progress. For the University such investments are relatively modest but they can be transformational for individuals, often making the difference between taking forward an idea or not. This is not something all Universities do and is evidence of the University of Surrey's strong commitment in this area.

Many young business also face a significant challenge in securing funding and investment to enable them to continue to grow beyond the initial start-up phase. Managing this transition is key to successfully navigating the "valley of death" described above and the University of Surrey has developed specific mechanisms to help businesses to do this.

One of these mechanisms is the SETsquared Surrey Scale-UP programme. The programme began in 2018 with the objective of supporting rapid growth within innovative and dynamic SMEs. Over 300 SMEs have received supported so far which has allowed them to attract over £100m in investment to enable their growth. Another important mechanism is the S100 Angel Investment Club.

### 7.2.1 S100 Angel Investment Club

The S100 Angel Investment Club is an angel investment network for start-up and early-stage businesses. It has close ties to SETsquared Surrey and the same team provides support to businesses wishing to present to the club by assisting with investment readiness and pitch preparation to help entrepreneurs to showcase their businesses and raise investment from Club members.

The Club meets four times a year and at each meeting four or five businesses are invited to deliver investor pitches demonstrating why they require capital investment. The pitches are then followed by a drinks reception, where presenting companies exhibit and meet the members face to face where they can demonstrate/showcase their product/service and exchange contact details.

The Club has been helping companies raise equity finance since 2007 and in that time has enabled businesses to raise over £300 million in funding. In 2021/22

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businesses received a total of £0.5 million investment directly from investors and were able to leverage a further £9.1 million to support their growth aspirations.

The economic impact of this was estimated based on the number of jobs it might be expected to support in the funded companies and the extent to which these jobs can reasonably be attributed to the University. The assumptions needed to do this were based on data provided by the University to support previous economic impact assessments and evaluations of similar programmes elsewhere in the UK.

In this way it was estimated that in 2021/22 the S100 Angel Investment Club contributed £7.0 million GVA to the UK economy and supported 110 jobs.

The support that the University provides to support business growth has helped to encourage a culture of serial entrepreneurship that has been instrumental in the emergence of some of Surrey's most successful industrial clusters. One of the best known examples of this is the digital games sector.



## Hollywood of Video Games

The University has been a key driver in the creation and growth of the video games industry in Guildford

As the home of more than 60 games studios and the birthplace of many world-first innovations and legendary titles, Guildford is sometimes referred to as the Hollywood of video games.

At the root of the cluster was Bullfrog Productions, originally a new start business which located on Surrey Research Park in 1991. Its workforce grew quickly and its signature product, Populous, became one of the best-selling PC games of all time, selling over 4 million copies. Its founders, Peter Molyneux and Les Edgar grew the company to the point where it was bought by the American video game company, Electronic Arts in 1995. Another early gaming company tenant on Surrey Research Park, Criterion Studies, was also later acquired by Electronic Arts in 2004.

Peter Molyneux, one of the founders of Bullfrog, went on to set up Lionhead Studios on Surrey Research Park in 1997, which was later bought over by Microsoft Studios in 2006. After this in 2012 he went on to set up another new development company in Guildford, 22Cans, which is best known for its Godus games. Over time, the momentum and investment drawn in around these and other gaming companies created a raft of further spin-out and new start businesses, which has made Guildford a magnet for talented game developers from around the world.

The University's pool of talented graduates and its academic offering through the Centre for Vision, Speech and Signal Processing and more recently the Centre for People Centred AI, have played a significant role in fuelling the sector's growth in the area. It is estimated that the wider Guildford area is home to over 1,500 of the most skilled programmers in the world.

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### 7.3 Ongoing Support

The University of Surrey has an impressive track record when it comes to supporting the creation of new enterprises and enabling them to grow but the role of the University does not stop once new enterprises have become established. Even after landing safely on the other side "valley of death" many enterprises continue to benefit from some form of ongoing support from the University to help them achieve their full potential. Perhaps the most tangible manifestation of this is the Surrey Research Park, which provides physical space for young companies to grow.

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### 7.3.1 The Surrey Research Park

The Surrey Research Park (SRP) is a University of Surrey enterprise that received its first tenants in 1985. Since then, it has grown to become one of the most prestigious and successful science parks in the UK, offering a range of business support services including incubator spaces and research and development opportunities.

In 2020/21 there were approximately 150 companies based at the Surrey Research Park. Of this total, 102 companies were directly contracted to the Surrey Research Park, employing approximately 4,300 people. The Surrey Research Park is accessible for companies working in all economic sectors but is targeted particularly towards those working in the fields of digital technology, science, health and engineering with businesses in these sectors accounting for most of the companies located at the Park.

One of the important factors behind the success of the Research Park is the access it provides to young entrepreneurial talent. Another important factor is the easy access it provides to academic expertise. Both have proven to be particularly important for attracting international investment from global research partners.

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**28% of companies on the Research Park offer placement opportunities to students and 19% hire graduates from university.**

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In 2020/21 there were approximately 150 companies based at the Surrey Research Park, of which 102 were tenants. These companies together employed approximately 4,250 people. The economic value added by these businesses was estimated by multiplying the average GVA/employee for the sector in which each business operates by the number of people employed by each business. Indirect effects were then captured by applying appropriate multipliers to the direct effects.

## 7.4 Summary Innovation Support Impacts

This chapter has considered the economic contribution of the University of Surrey's innovation support activity. Specifically, the economic benefits associated with the SETsquared Surrey, the S100 Angel Investment club and the Surrey Research Park. Taken together these activities generated £660 million GVA for the UK economy in 2021/22 and supported 7,640 jobs. These impacts are summarised in Table 5-1<sup>26</sup>.

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<sup>26</sup> The level of innovation support activity described in this chapter is broadly similar to the pre-covid level of activity reported in the previous impact assessment published in 2020 however the impacts described are higher. This is due to changes in the economic ratios and multipliers used to estimate these impacts, which are based on official statistics and reflect underlying changes in the UK economy.

**Table 7-1: Summary Innovation Support Impacts**

Source of Impact	Guildford	Surrey	UK
GVA (£ million)			
SETsquared Surrey	2	2	3
S100 Angel Investment Club	4	5	7
Surrey Research Park	590	646	650
<b>Total</b>	<b>596</b>	<b>654</b>	<b>660</b>
Jobs			
SETsquared Surrey	100	100	120
S100 Angel Investment Club	60	80	110
Surrey Research Park	6,220	6,900	7,410
<b>Total</b>	<b>6,380</b>	<b>7,080</b>	<b>7,640</b>

Source: BiGGAR Economics Analysis

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## 8.

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# An Innovation Ecosystem

Surrey University sit at the centre of a complex innovation ecosystem. The components of this system are linked together by a strong culture of collaboration and applied learning.

Each chapter of this report has considered how a different aspect of the activity undertaken at Surrey University generates economic benefits for the local area, the wider region, and the UK economy as a whole. However, while isolating the value of these individual activities can be helpful for analytical purposes, they do not happen in isolation. Each activity is part of a wider system.

The purpose of this system is to support the process of innovation, which fundamentally underpins economic growth. The purpose of this section is to explain how these various components fit together within this system

## 8.1 A Framework for Analysis

There are many definitions of innovation systems and innovation ecosystems. One of the most useful is the Systems of Innovation approach developed in Sweden by Professor Charles Edquist, which is influenced by the successful innovation systems in the Nordic countries in particular. Professor Edquist has defined an innovation system as follows:

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**“All important economic, social, political, organisational, institutional, and other factors that influence the development, diffusion and use of innovation”**

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The Systems of Innovation approach identifies the main determinants of innovation processes, that is the main parts of the system that need to interact and work together. These components can be organised in to four broad categories as set out in Figure 8-1.

**Figure 8-1: Determinants of Innovation Processes**

### **I. Provision of knowledge inputs to the innovation process**

Provision of R&D and, thus, creation or recombination of new knowledge, primarily in engineering, computer sciences, medicine, life sciences and natural sciences.

Competence building, e.g. through individual learning (educating and training the labour force for innovation and R&D activities) and organisational learning.

### **II. Demand-side activities**

Formation of new product markets.

Articulation of quality requirements emanating from the demand side with regard to new products.

### **III. Provision of constituents for Systems of Innovation (SIs)**

Creating and changing organisations needed for developing new fields of innovation. Examples include enhancing entrepreneurship to create new firms and intrapreneurship to diversify existing firms; and creating new research organisations, policy agencies, etc.

Networking through markets and other mechanisms, including interactive learning among different organisations (potentially) involved in the innovation processes. This implies integrating new knowledge elements developed in different spheres of the SI and coming from outside with elements already available in the innovating firms.

Creating and changing institutions e.g., patent laws, tax laws, environment and safety regulations, R&D investment routines, cultural norms, etc. – that influence innovating organisations and innovation processes by providing incentives for and removing obstacles to innovation.

### **IV. Support services for innovating firms**

Incubation activities such as providing access to facilities and administrative support for innovating efforts.

Financing of innovation processes and other activities that may facilitate commercialisation of knowledge and its adoption.

Provision of consultancy services relevant for innovation processes, e.g., technology transfer, commercial information, and legal advice.

Source: Edquist (2011)<sup>27</sup>

<sup>27</sup> Adapted from various publications from Professor Charles Edquist, Ruben Rausing Chair in Innovation Research at Centre for Innovation, Research and Competence in the Learning Economy (CIRCLE), Lund University, Sweden, including Edquist (November 2011) Design of innovation policy through diagnostic analysis: identification of systemic problems or failures, in Industrial and Corporate Change

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## 8.2 The Surrey Innovation Ecosystem

The analysis presented in this report shows that the University of Surrey contributes to several aspects of the innovation framework proposed by Professor Edquist.

The University's focus on undertaking applied research and delivering industry relevant teaching enables it to provide high-quality knowledge inputs, essential components of any effective innovation ecosystem. Well established processes for delivering collaborative research initiatives and innovation support services (see chapter 5.2) and a long-standing emphasis on student placements (see chapter 4.3) provide effective mechanisms for embedding these knowledge inputs into industry.

The University's commitment to delivering industry relevant research and teaching has also helped foster a deep understanding of the challenges faced by industry and insight into the potential applications for new technologies. The University has used this position to good effect by bringing researchers working in different but complementary disciplines together with public and private sector partners through a multitude of collaborative research initiatives (see for example discussion in section 5.1.1 on Pan-University Research Institutes). Such collaborations are essential for facilitating the interactive learning between organisations envisaged in the "innovation systems" component of the Edquist model.

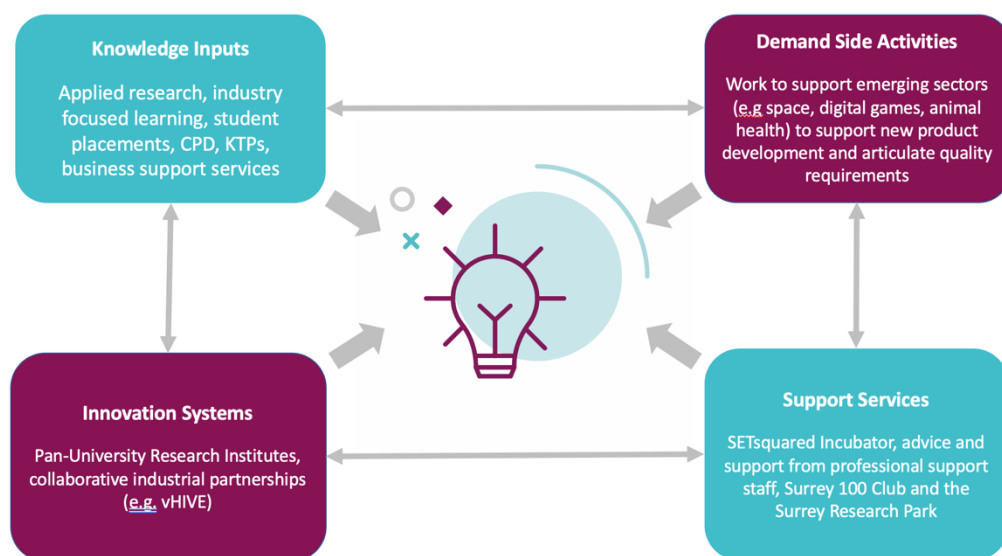
However, what perhaps most distinguishes the University of Surrey's contribution to the innovation ecosystem is the extent to which it supports and enables businesses to absorb and apply the outputs from the innovation process. The Edquist model identifies three important elements of this: incubation, finance and consultancy. The University of Surrey is actively involved in delivering all three of these elements through the SETsquared Surrey (see section 7.1), the S100 Angel Investment Club (see section 7.2.1) and the various research support services it provides (see section 5.2).

As discussed in (section 7.1.3) this support extends beyond individual businesses and has enabled the University to play an important role in supporting the development of a number of important sectors of the Surrey economy. The most mature example of this is the satellite industry, which has thrived in Surrey at least in part due to the active and ongoing support it has received from the University for decades. However the evidence presented in this report suggests that the University is now playing a similar role in other emerging sectors such as artificial intelligence and animal health. By providing strategic leadership when such sectors are still at a relatively early stage of development the University is helping to ensure that the potential benefits for the region (and the wider UK economy) are maximised.

A summary of the contribution the University of Surrey's makes to Surrey's wider innovation ecosystem is provided in Figure 8-2 The University of Surrey's Contribution to the Innovation Ecosystem.



**Figure 8-2 The University of Surrey's Contribution to the Innovation Ecosystem**



Source: BiGGAR Economics application of Edquist framework to UoS

## 9. Summary and Changes

This section provides a summary of the study's main findings and compares them to those of the study conducted by BiGGAR Economics in 2020.

### 9.1 Summary of Quantitative Impacts

It was estimated that in 2021/22 the University of Surrey generated:

- **£1.1 billion GVA** and supported **14,500 jobs** in Guildford;
- **£1.3 billion GVA** and supported **17,620 jobs** in Surrey; and
- **£1.9 billion GVA** and supported **25,360 jobs** across the UK.

A breakdown of the GVA and employment by source of impact and study area is provided in Table 9-1 and Table 9-2.

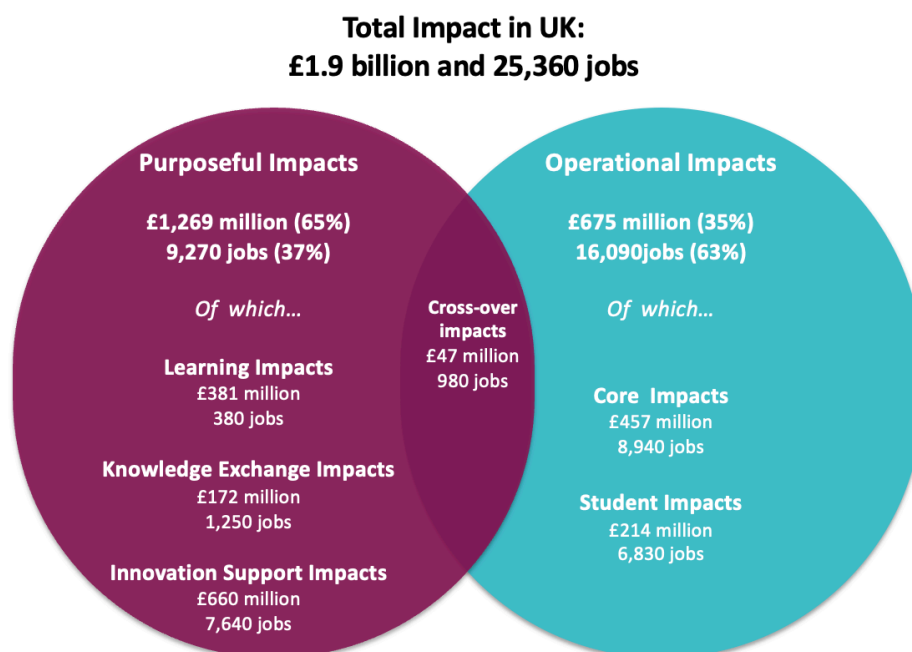
**Table 9-1: GVA by Source of Impact**

GVA (£million)	Guildford	Surrey	UK
<b>Purposeful Impacts</b>			
Learning Impacts	76	121	381
Knowledge Translation Impacts	48	76	172
Innovation Support Impacts	596	654	660
Medical Research Impacts	<1	1	56
<b>Total Purposeful Impact</b>	<b>720</b>	<b>852</b>	<b>1,269</b>
<b>Operational Impacts</b>			
Core impacts	231	274	457
Student impacts	111	146	214
Tourism impacts	4	4	4
<b>Total operational impact</b>	<b>346</b>	<b>424</b>	<b>675</b>
<b>Total GVA impact</b>	<b>1,066</b>	<b>1,276</b>	<b>1,944</b>

**Table 9-2: Employment by Source of Impact**

Jobs	Guildford	Surrey	UK
<b>Purposeful Impacts</b>			
Learning Impacts	30	60	380
Knowledge Translation Impacts	580	720	1,250
Innovation Support Impacts	6,380	7,080	7,640
<b>Total purposeful impact</b>	<b>6,990</b>	<b>7,850</b>	<b>9,270</b>
<b>Operational Impacts</b>			
Core impacts	3,720	4,850	8,940
Student impacts	3,540	4,650	6,830
Tourism impacts	260	270	320
<b>Total operational impact</b>	<b>7,510</b>	<b>9,770</b>	<b>16,090</b>
<b>Total Jobs impact</b>	<b>14500</b>	<b>17,620</b>	<b>25,360</b>

**Figure 9-1: University of Surrey - Purposeful and Operational Impacts**



Source: BiGGAR Economics Analysis

## 9.2 Impact Multipliers

Multipliers are a useful summary indicator to express within a single figure the returns from investment in an organisation. In 2021/22, the University of Surrey had an income of £305 million, generated £210 million direct GVA and directly employed 3,846 people. Therefore:

- For each person it directly employed, the University of Surrey supported 7.9 jobs across the UK; and
- For each £1 of income received, the University of Surrey generated £6.37 in economic impact across the UK.

## 9.3 Changes Since 2018/19

The total UK GVA impact of the University of Surrey in 2021/22 was £1.9 billion, which is around £100 million more than in 2018/19. To allow for comparison, the methodology used in the two studies remained consistent and where assumptions had to be made for the 2021/22 study due to a lack of data, it reflected the assumptions made in 2018/19.

The growth in the core impact is largely in line with the increase in supply chain spending. The increase in the student impacts arises from the increase in student expenditure impact, which has resulted from an increase in the indirect and induced multipliers in the updated UK input output tables which are used to determine the economic multipliers. There has been an increase in the knowledge translation impacts for similar reasons.

**Table 9-3: GVA Impact (£m) Difference between 2018/19 and 2021/22**

	2018/19	2021/22
Core Impacts	434	457
Student Impacts	175	214
Tourism Impacts	3	4
Learning Impacts	375	356
Student Placements	26	26
Knowledge Translation Impacts	121	172
Innovation Support Impacts	615	660
Medical Research Impacts	51	56
<b>Total</b>	<b>1,838</b>	<b>1,944</b>

Source: BiGGAR Economics Analysis

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