

Economic Impact of the University of Gloucestershire

A report to



BiGGAR Economics

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CONTENTS

Page

1	EXECUTIVE SUMMARY	2
2	INTRODUCTION	4
3	METHODOLOGY AND APPROACH	5
4	GLOUCESTERSHIRE AND ITS UNIVERSITY	7
5	CORE UNIVERSITY IMPACTS.....	12
6	STUDENT IMPACTS	22
7	KNOWLEDGE TRANSFER IMPACTS.....	30
8	GRADUATE PRODUCTIVITY IMPACTS.....	44
9	CONTRIBUTION TO THE LOCAL ECONOMY.....	49
10	SUMMARY OF QUANTIFIABLE IMPACTS.....	54
11	WIDER IMPACTS	56
12	ECONOMIC RATIOS AND MULTIPLIERS	59

1 EXECUTIVE SUMMARY

This report presents the findings of an economic impact study of the University of Gloucestershire undertaken by BiGGAR Economics in autumn 2014.

1.1 Quantitative Economic Impacts

The key quantitative findings of the report are that:

In 2012/13 the University of Gloucestershire generated **£356.5 million Gross Value Added (GVA)** for the UK economy and supported **3,729 jobs**.

This impact included:

- £151.2 million GVA and 2,163 jobs in the County of Gloucestershire; and
- £208.5 million GVA and 2,826 jobs in the South West.

Based on these impacts it can be shown that in 2013/14 the University of Gloucestershire:

- generated a total impact of £7.47 for every £1 of direct impact.
- supported 4.5 jobs the UK for every person directly employed; and
- generated £5.03 GVA for the UK economy for every £1 income received from funding bodies.

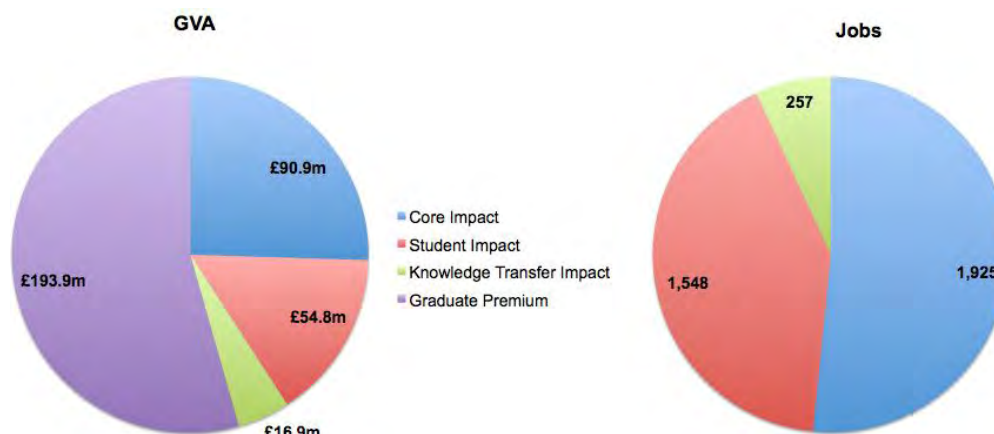
Source: BiGGAR Economics

The study considered the full range of activity undertaken by the University of Gloucestershire and considered both quantifiable and unquantifiable economic impacts. The quantifiable impacts considered include those generated by:

- the University's **core operations**, such as direct employment, expenditure on supplies, the expenditure of staff and capital investment;
- **students**, including student spending, part-time work and voluntary activity;
- **graduates** and the additional contribution they make to the UK economy as a result of qualifications and work experience gained through the University; and
- **knowledge transfer activity** including student placements and business support to start-up businesses and undertaking consultancy, research and workforce training for established businesses;

A breakdown of the quantifiable impact generated by the University for the UK economy by each of these activities is provided in Figure 1-1.

Figure 1-1 Impact by Source - UK



1.2 A Driver of Regional Economic Growth

What is more difficult to quantify is the role that the University of Gloucestershire plays in sustaining and enhancing the economic prosperity of Gloucestershire. It does this by:

- **operating as a successful business** - the University of Gloucestershire is a successful business in its own right. In terms of employment, it is the 6th largest business in the county and has a well developed local supply chain that helps to support hundreds of other businesses elsewhere in the county;
- **encouraging students and staff to volunteer** – in 2013/14 students and staff spent over 10,000 hours working for charities and other voluntary organisations, most of which are based in Gloucestershire. This support has helped third sector organisations in the county to maintain service delivery during a particularly challenging funding environment;
- **helping local businesses and organisations to improve their performance** – the University provides a wide range of support services to businesses and other organisations, helping them to access the knowledge and expertise they require to improve their performance;
- **developing the local workforce** – by providing a steady stream of well trained graduates the University helps to ensure that local businesses are able to recruit the staff they require to develop and grow; and
- **creating a vibrant and stimulating environment** – through its support for the arts and the voluntary and social activities of students and staff the University supports a vibrant and creative environment in Cheltenham and Gloucester, which is conducive to innovation and makes Cheltenham and Gloucester more attractive places to live, visit and invest.

In each of these areas the University has the potential to deliver even greater benefits for the local area. The launch of the new Growth Hub in October 2014 will be key to realising this potential.

The new Hub represents an innovative new approach to economic development that puts the University right at the heart of local economic policy delivery. By providing a flexible framework within which businesses will be able to engage with the local knowledge base on their own terms, the Growth Hub should be key to realising the full potential of the University as a driver of local economic growth.

2 INTRODUCTION

This report presents the findings of an economic impact study of the University of Gloucestershire undertaken by BiGGAR Economics in October 2014.

2.1 The University of Gloucestershire

The University of Gloucestershire has 11,932 students, nearly 1,600 staff and is situated across three campuses in Cheltenham and Gloucester. Although the University is one of the UK's newest universities, having achieved university status in 2001, its origins date back over 150 years to the church foundation of teacher education colleges and the Mechanic's Institutes movement of the Victorian period. Building on these roots the University has been able to develop distinctive strengths in areas such as learning, teaching and sustainability. The University has been training teachers since 1847 and Ofsted has rated its primary school training provision 'outstanding'.

2.2 BiGGAR Economics

BiGGAR Economics is an independent economic consultancy based near Edinburgh with particular expertise in higher education and knowledge transfer. Over the past five years BiGGAR Economics has assessed the economic impacts of around thirty universities and research institutes across the UK and elsewhere in Europe. This experience has enabled the team to develop a unique approach to assessing the impact of higher education institutions that captures the distinctive strengths of different types of institution.

2.3 Report Structure

The remainder of this report is structured as follows:

- chapter 3 provides background information about the University of Gloucestershire and the local economy;
- chapter 4 describes the methodology and approach used in this report;
- chapter 5 discusses how the University's core activities of turnover, direct employment, purchase of supplies, staff spending their wages and spending on capital projects supports economic impact;
- chapter 6 illustrates how the University's students create impact through their expenditure, part-time work and volunteering;
- chapter 7 describes how the University helps businesses and organisations in the local area to improve their performance;
- chapter 8 discusses the economic contribution of graduates from the University;
- chapter 9 describes the contribution that the University makes to the economies of Cheltenham and Gloucester;
- chapter 10 summarises the quantifiable impacts of the University; and
- chapter 11 describes the wider impacts of the University in particular the contribution it makes to enhancing environmental sustainability; and
- the appendix provides a list of the economic ratios and multipliers used to estimate the economic impacts considered in the report.

3 METHODOLOGY AND APPROACH

This chapter describes the methodology and approach used in this report.

3.1 Approach

The starting point for this study was an information request from BiGGAR Economics to the University of Gloucestershire. The data request was designed to make use of existing data that would be readily available to staff and did not involve any primary research.

The data gathering exercise was then supplemented with consultations with members of staff from the Growth Hub and qualitative information about the University's activities that was supplied by key staff from other departments of the University. The consultations and wider information request were designed to obtain further information about the distinctive strengths of the University and to help identify any wider, unquantifiable sources of economic impact.

3.2 Methodology

This report quantifies the economic impacts of the University of Gloucestershire in terms of Gross Value Added (GVA) and jobs.

GVA is the measure of the value that an organisation, company or industry adds to the economy. This report uses the production approach to measuring GVA, where the GVA is equal to the value of production less the value of the inputs used. Typically this is estimated by subtracting the non-labour costs of the organisation from the organisation's total revenue.

Note on terminology

Gross Value Added (GVA) is a measure of the economic contribution of an individual organisation (e.g. the University of Gloucestershire). This contribution excludes the value of goods and services produced by other organisations and used during the course of production. This means that the direct GVA of the organisation will be less than its total output or turnover.

3.3 Estimating Economic Impact

Economic impact is reported using two measures:

- **Gross Value Added (GVA)** - this measures the monetary contribution that the University, or a particular area of activity undertaken within the University, makes to the economy; and
- **Employment (jobs)** – this is the number of full time equivalent (fte) jobs supported by the University, or a particular area of activity.

This assessment considers the direct and indirect economic impact of the University of Gloucestershire's activity. Direct effects measure the economic activity that is directly supported by the University (i.e. staff employed by University or employment supported by the direct expenditure of a student or member of staff). Indirect effects include two type of effect:

- supplier multiplier effects – the purchases of supplies and services associated with the direct impact and all the resulting purchases of supplies and services down the supply chain that has occurred because of the original purchase; and
- income multiplier effects – the expenditure of employees supported by the direct and supplier effects.

3.3.1 Estimating Gross Direct Economic Impact

In this report income and spending are considered analogous to turnover. The approach used to estimate the economic impact of each source of impact varies depending on the information available about the source of impact:

- for impacts where turnover and spending on goods and services are both known (e.g. in calculating direct impact) expenditure on goods and services was subtracted from turnover to give GVA; and
- for impacts where only turnover or employee numbers were known, appropriate ratios between turnover/GVA or GVA/employee were applied to the source data in order to estimate the gross GVA and employment impact.

For all types of impact ratios between GVA, turnover and employment were obtained from the UK Annual Business Survey 2012.

3.3.2 Estimating Net Economic Impact

Gross impacts were then converted to net impacts by taking account of:

- leakage – this considers how much of the economic activity occurs in the study area. Leakage is accounted for by considering the geographical source of the impact. This study considers the economic impact for three different geographic areas:
 - Gloucestershire (the “local area”);
 - the south-west of England (the “region”); and
 - the UK as a whole.
- displacement – this takes into account whether and to what extent the activity of the University has resulted in the reduction of activity elsewhere in the study area (e.g. would part-time jobs undertaken by students at the University have been undertaken by other local residents if the University did not exist, thus reducing the economic impact of other local residents); and
- multipliers - these capture the effect of subsequent spending rounds as the initial expenditure is re-spent elsewhere in the economy. This is done by applying GVA and employment multipliers to gross GVA and employment.

The multipliers used in this report were derived from the Scottish Government’s Input-Output tables¹. This source was used because it is more up to date than equivalent information published for the UK and because it provides multipliers for different sectors.

The Scottish multipliers were then adapted to each of the study areas to reflect the comparative size of the economy in each area. This was done based on BiGGAR Economics previous experience, informed by consultation with staff from the University and by the relative size and scale of the economies of each of the study areas. The assumptions used to do this are presented in Table 3.1.

Table 3.1 – Multiplier Impact Assumptions

	Gloucestershire	South-west	UK
% of Scottish multiplier	33%	100%	120%

¹ Scottish Government, Input-Output Tables 2009, 2013

4 GLOUCESTERSHIRE AND ITS UNIVERSITY

This chapter presents some contextual information about the University of Gloucestershire and about Cheltenham and Gloucester, where the University's campuses are based.

4.1 The University of Gloucestershire

The strategic goals and focus of the University of Gloucestershire is focused strongly on its students. Evidence of this commitment can be found in the University's strategic plan, which emphasises the University's aim of nurturing and developing the full potential of its students. As "the University of, and for, Gloucestershire", the University also aims to promote economic, social and cultural wellbeing in the communities it serves.

The strategic goals of the University as stated in its strategic plan are²:

- to provide students with excellent learning experiences through outstanding teaching and support for learning;
- to promote enterprise, employability and wider economic, social and cultural benefit to the community;
- to embed research, scholarship, practice and consultancy in all activities;
- to build strong relationships with selected partners for mutual benefit; and
- to build a successful and sustainable organisation.

The University also has a key role in delivering economic growth for Gloucestershire as identified in the strategic economic plan for the area. The plan highlights the University's partnership with the LEP to develop a Growth Hub to drive growth for businesses in Gloucestershire.³ The University's strategic partnership with two major further education colleges in Gloucestershire in order to widen participation in further and higher education is also notable.

4.1.1 The Growth Hub

The Growth Hub opened for business in October 2014. Located at the University of Gloucestershire's Oxstalls campus in Gloucester, the Growth Hub represents an innovative partnership that brings together business development professionals from the University and the GFirst Local Enterprise Partnership.

The overarching aim of the Growth Hub is to act as a catalyst for economic growth in the county by encouraging the development of world-class companies, increasing exports and supporting entrepreneurial start-ups with high growth potential. The Growth Hub will achieve this by offering a new way of providing business support services.

The vision for the Growth Hub is to be the "go to" place for businesses to access a diverse range of coordinated and integrated business services from a number of service providers and advisory bodies. Unlike other business support services that are currently available, the Growth Hub will provide a tailored business service for companies and start-ups with high growth potential. This will work on the basis of understanding a company's specific goals, drivers and requirements and working with a business to formulate and deliver a tailored package of support.

² University of Gloucestershire, *Strategic Plan 2012 – 17*.

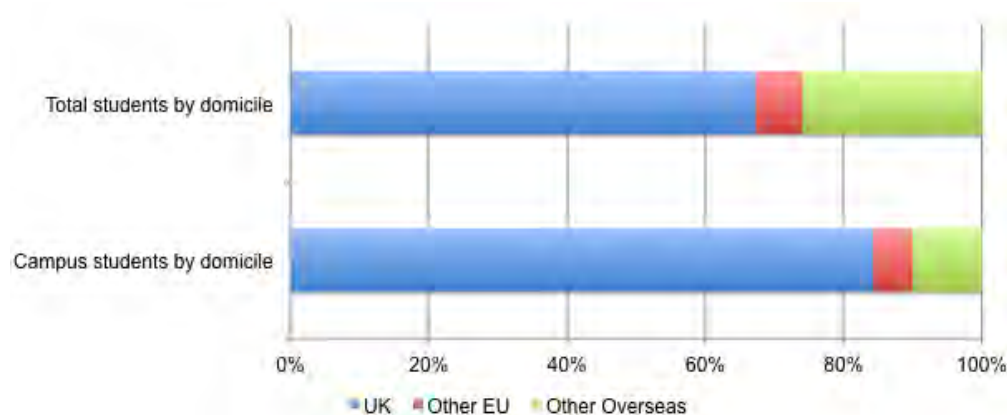
³ Gfirst LEP, *Strategic Economic Plan for Gloucestershire*, March 2014

4.1.2 Students

There were 11,932 students enrolled at the University of Gloucestershire in 2013/14. The majority of these students were based on the three campuses in Gloucester and Cheltenham however a significant proportion were educated by the University through distance learning or through partner institutions.

The remote education systems that are used by the University enable them to reach a more international student market than would be possible if the University had only used campus-based learning. Of the students who were educated on one of the three campuses, 84% were from the UK, and 6% were from elsewhere in the EU and a further 10% were from other overseas. However, 26% of the total enrolment of the University consists of students from outwith the EU and only 67% of students are from the UK. This is because many of the distance learning and associate education methods are easier for, and designed for these international students.

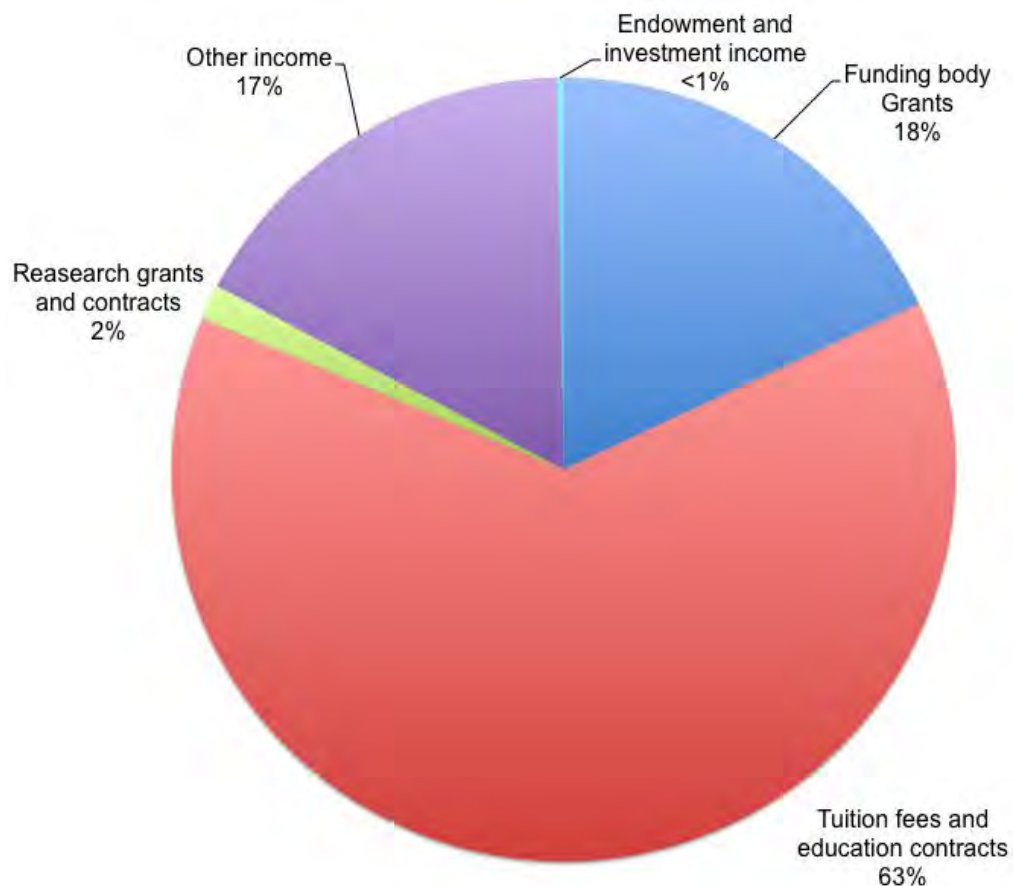
Figure 4-1 Student origins



4.1.3 Funding

In 2013/14 the total income of the University was £70.9 million. The majority of the funding for the University came from Tuition Fees and Education Contracts, which amounted to £45.4 million. Funding Body grants (£12.9 million) and Other income (£12.2 million) contributed the majority of the remaining funding. The University received £1.0 million of funding from research grants and contracts, which represents 2% of its total income.

Figure 4-2: University income by source



4.2 Local Area

The communities in which the University of Gloucestershire operates give a focus to its strategic goals. The communities are profiled below to give some socio-economic context to the environment that the University operates in. The Local Areas for the study are:

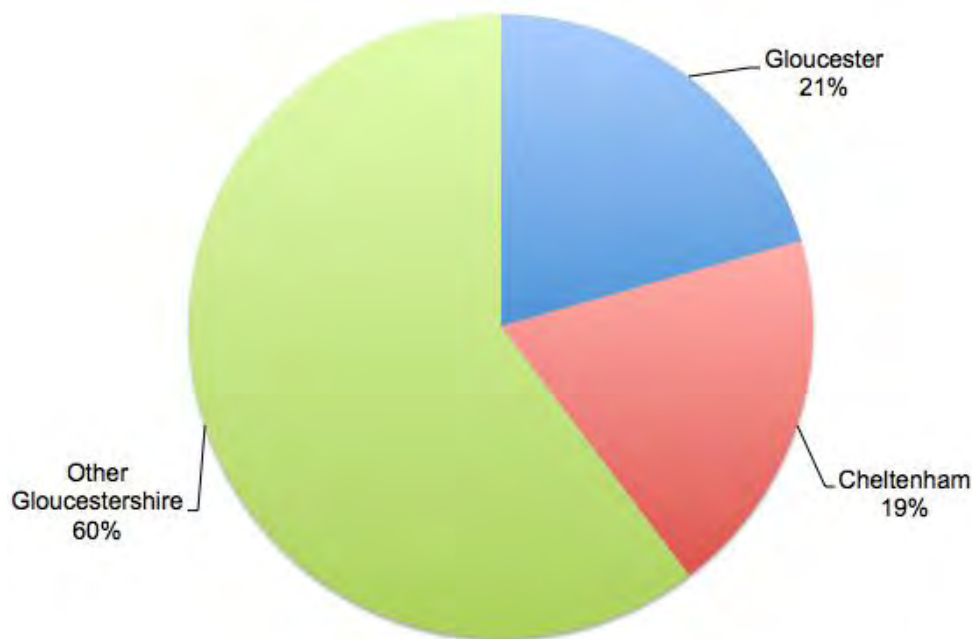
- Cheltenham;
- Gloucester; and
- Gloucestershire.

4.2.1 Demographics

The population of Gloucestershire is 605,700⁴, of whom 40% stay in the City of Gloucester with a population of 124,600 and the town of Cheltenham, which has a population of 115,900.

⁴ ONS, *Mid-year population estimates for 2013, 2014*
Economic Impact of the University of Gloucestershire

Figure 4-3 : Population distribution within Gloucestershire



4.2.2 Employment and Earnings

The earnings of people living in Gloucestershire are similar to those of the UK as a whole. The average full time worker in Gloucestershire is paid £514.40 a week, compared to £518.10 for the average UK worker. Within Gloucestershire there is a difference between the two settlements of Gloucester and Cheltenham. Cheltenham has an unemployment rate of 6.3% and average weekly pay of £553.10. The unemployment rate in Gloucester is 7.3% and full time workers have an average weekly pay of £479.40.

Table 4.1 – Employment and Earnings

	Gloucester	Cheltenham	Gloucestershire	UK
Total Employment	60,400	58,800	303,000	30,763,000
Unemployment Rate	7.3%	6.3%	4.9%	6.8%
Gross Weekly Pay (Full Time worker)	£479.40	£553.10	£514.40	£518.10

4.2.3 Enterprise

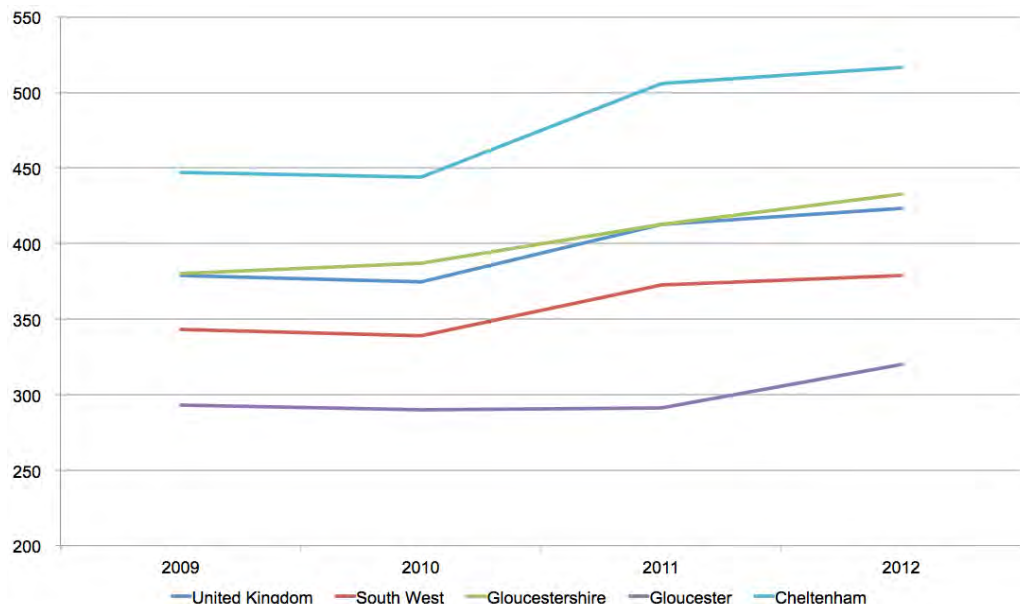
The rate of business start up varies across the different local areas. In 2012 there were 423 new businesses for every 100,000 people⁵. This reflects growth of 12% since 2009 when the business start up rate was 379 per 100,000 people. The start up rate in the county of Gloucestershire is broadly in line with the rate for the UK and higher than that in the South West of England.

There is a significant difference between Cheltenham and Gloucester. The business start up rate in Gloucester is 24% lower than that for the UK as a whole, with 320 new

⁵ ONS, *Business Demography 2012*, November 2013
Economic Impact of the University of Gloucestershire

businesses started per 100,000 people in 2012. In Cheltenham the business start up rate is 22% higher than that for the UK as a whole, with 517 businesses set up per 100,000 in 2012. These trends have been consistent since 2009. In order to address the businesses needs of the local areas the University has recently established the Growth Hub in Gloucester to promote and support enterprise in the city and the wider county.

Figure 4-4 Business Start Up rate per 100,000 people



5 CORE UNIVERSITY IMPACTS

This section describes the core operational impacts of the University of Gloucestershire.

5.1 Core Activities

The core economic impacts associated with the University of Gloucestershire are those that occur as a result of the day-to-day operations of the University and its students and staff. The impacts that are covered in this chapter include:

- direct impacts – these are the impacts resulting from the University's income and employment;
- supplier impact – the University purchases goods and services that increase the turnover of businesses and support jobs in its supply chain;
- staff spending impact – staff spending their wages increases the turnover of businesses in the economy, which generates wealth and supports employment; and
- impact of capital spending – expenditure on capital projects supports additional economic activity in businesses in the wider economy, particularly in the construction and IT sector; and
- tourism impact – arising as a result of expenditure by visitors to students and staff.

5.2 Direct Impact

5.2.1 Methodology

The direct operational Gross Value Added (GVA) of the University was estimated by subtracting all of the non-staff expenditure from the total operational income of the University.

5.2.2 Inputs

The total income of the University of Gloucestershire in 2012/13 was £70.9 million and £23.2 million was spent on supplies. The University employed 1,597 staff. This equated to 831 full time equivalent staff in the UK.

Table 5.1 – Key Assumptions for Direct Impact 2013/14

Assumption	Value	Source
Total income of university	£70,925,000	University of Gloucestershire Financial Statements 2013/14
Spending on supplies	£23,217,000	
Staff employment (headcount)	1,597	University of Gloucestershire
Staff employment (ftes)	831	

5.2.3 Output

The total income of the university less the amount spent on supplies gives the direct GVA of the University of Gloucestershire, which is £47.7 million. The total employment impact is the 831 ftes that the University employs in the UK.

The direct impact of the University occurs where the institution is based. Therefore all of the direct impact occurs in Gloucestershire.

Table 5.2 – Core Economic Impact 2013/14

	Gloucestershire	South West	UK
GVA (£)	47.7	47.7	47.7
Jobs	831	831	831

Source: BiGGAR Economics

5.3 Supplier Impact

The University has an economic impact on the companies in its direct supply chain. The expenditure of the University of Gloucestershire in these companies supports jobs and generates GVA in these businesses.

5.3.1 Methodology

The first step in estimating this impact is to estimate how much of the University's expenditure on supplies occurs in each study area.

The GVA impact of expenditure on supplies was estimated by considering the expenditure on supplies by sector. The expenditure in each sector supports different GVA depending on the turnover to GVA ratio for that sector (the UK Annual Business Survey⁶ gives a breakdown of these figures for industries and smaller sectors). The impact elsewhere in the economy was estimated by applying GVA multipliers appropriate to the sector in which the expenditure took place.

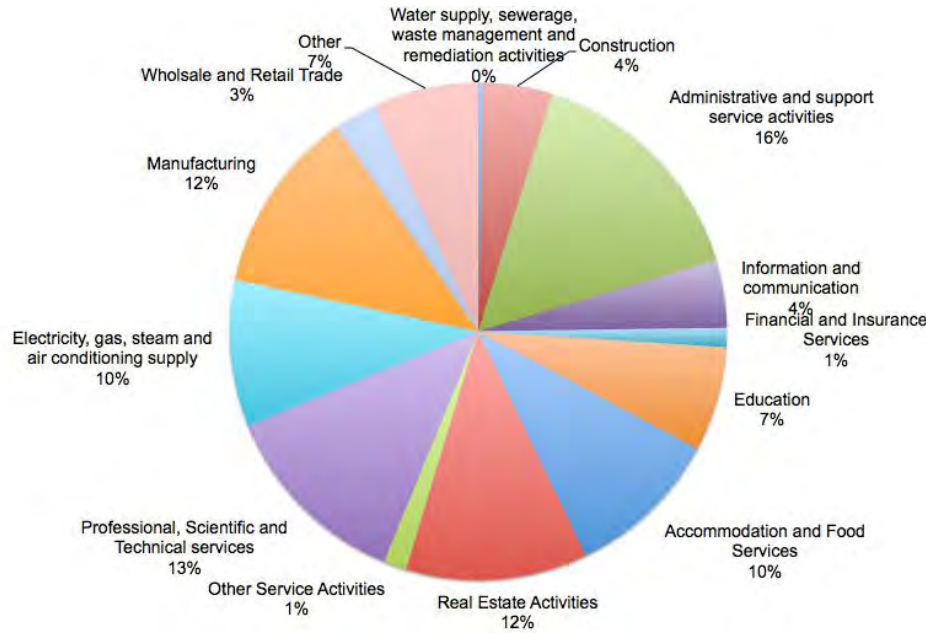
The employment impact of the expenditure on supplies was estimated by applying the turnover per employee in the industries where the expenditure took place. The impact throughout the economy was estimated by applying employment multipliers appropriate to the sector.

5.3.2 Inputs

In 2013/14 the University of Gloucestershire spent £23.2 million on goods and services. This supply chain covers a wide variety of the economy and the expenditure is shown split by sections of the economy in Figure 1. This shows that the largest section of expenditure was on administrative and support service activities, followed by professional, scientific and technical services.

⁶ ONS, UK Annual Business Survey 2012, 2013

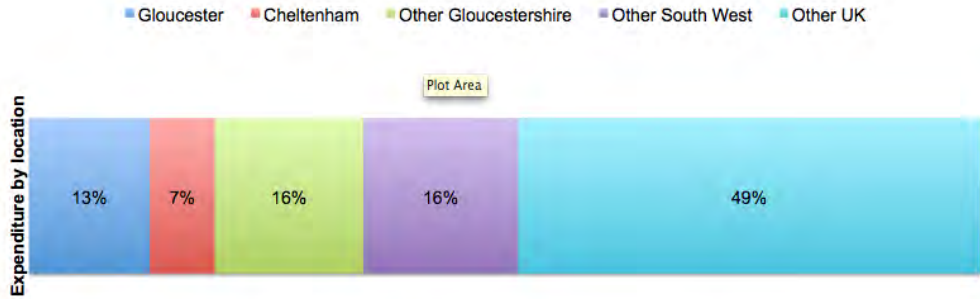
Figure 4.5-1 - Supplier spend by section of the economy



Source: BiGGAR Economics analysis of data from the University of Gloucestershire

The supply chain for the University was spread throughout the UK and a significant proportion of the supplies were procured locally. The expenditure is given by the study areas in Figure 4.5-2, which shows that more than half of the supplies purchased by the University were purchased from suppliers somewhere in the South West.

Figure 4.5-2 - Supply expenditure by study area



Source: BiGGAR Economics analysis of data from the University of Gloucestershire

The key assumptions used to estimate the supplier impact are given in Table 5.3.

Table 5.3 – Key Assumptions for Supplier Impact 2013/14

Assumption	Value	Source
Activity Assumptions		
Total spend on supplies	£23,217,000	University of Gloucestershire Data
Spending on supplies by industry	See Fig. 1	
Spending on supplies by area	See Fig. 2	
Economic Assumptions		
Economic ratios	See Appendix	ONS Annual Business Survey 2012
Economic Multipliers		BiGGAR Economics

Source: BiGGAR Economics

5.3.3 Output

The total economic impact from the University of Gloucestershire's expenditure on supplies was £18.4 million GVA and 502 jobs in the UK. The impact in the south-west was £8.8 million GVA and 239 jobs and in Gloucestershire the impact was £4.4 million GVA and 121 jobs. This impact is summarised in Table 5.4.

Table 5.4 – Supplier Impact 2013/14

	Gloucestershire	South West	UK
Direct GVA (£m)	3.6	5.3	10.3
Direct employment ⁹⁹	99	146	283
Indirect GVA (£m)	0.8	3.4	8.1
Indirect employment	21	94	219
Total GVA (£m)	4.4	8.8	18.4
Total jobs	121	239	502

Source: BiGGAR Economics

5.4 Staff Expenditure Impact

The University of Gloucestershire's staff also generate an economic impact as a result of the money they spend in local businesses and elsewhere in the economy.

5.4.1 Methodology

The first step in estimating this impact was to estimate how much money staff spent in each study area.

This involved two steps. The first was that the amount paid to staff living in each study area was assumed to be proportional to the number of staff living in each area. The second was an assumption about the proportion of staff wages that were spent in each study area. This assumption was different for staff living in each of the different study areas.

The economic impact of staff expenditure as measured by GVA and employment supported, was estimated by applying economic assumptions appropriate to the sector as described in the previous section (i.e. turnover/GVA ratio, turnover/employee ratio, GVA multiplier and employment multipliers).

5.4.2 Inputs

The main assumption used to estimate the impact of staff expenditure was the level of salaries paid to staff living in each area. In 2013/14 the University of Gloucestershire spent £38.8 million on staff salaries (of which £38.7 was paid to staff in the UK). This was split between staff living in each of the three study areas. The majority of the salaries were paid to staff living in Gloucestershire (73.6%).

The next step in estimating this impact was to estimate how much of the total staff wages would be spent in each of the study areas. Detailed information about where staff spend their wages was not available so it was necessary to make some assumptions about where staff living in different study areas might spend their wages. These assumptions were based on BiGGAR Economics previous experience of undertaking similar analysis for around 30 universities elsewhere in the UK and Europe and are presented in the staff expenditure matrix in Table 5.5.

What this shows is that it was assumed that staff who live and work in Gloucestershire would generally spend a higher proportion of their wages in Gloucestershire than staff who work in Gloucestershire but live elsewhere in the south-west or the UK. For example the second column in the table shows that it was assumed that staff who live in Gloucestershire would spend 50% of their wages in Gloucestershire, 60% of their wages somewhere in the south-west (i.e. 10% elsewhere in the south-west) and 90% somewhere in the UK.

Table 5.5 – Staff spending matrix

Staff living in...	Gloucestershire	South West	UK
Staff spending in			
Gloucestershire	50%	25%	10%
South West	60%	60%	25%
UK	90%	90%	90%

Source: BiGGAR Economics

The key assumptions used to estimate the impact of staff expenditure are given in Table 5.6. The economic ratios and multipliers used were those for the whole economy in order to reflect the wide range of sectors in which individuals spend their salaries.

Table 5.6 – Key Assumptions for Staff Spending Impact 2013/14

Assumption	Value	Source
Activity Assumptions		
Total expenditure on UK staff salaries	£38,688,000	University of Gloucestershire Data
% to staff in Gloucestershire	73.6%	
% to staff in South West	79.5%	
% to staff in UK	100.0%	
Staff spending Matrix	See Fig. 2	BiGGAR Economics
Economic Assumptions		
Economic ratios	See Appendix	ONS Annual Business Survey 2012
Economic Multipliers		BiGGAR Economics

Source: BiGGAR Economics

5.4.3 Output

The total economic impact from the expenditure of staff employed by the University of Gloucestershire was £19.6 million GVA and 488 jobs in the UK. The impact in the south-west was £10.6 million GVA and 261 jobs, and in Gloucestershire the impact was £5.6 million GVA and 133 jobs. This impact is summarised in Table 5.7.

Table 5.7 – Staff Expenditure Impact 2013/14

	Gloucestershire	South West	UK
Direct GVA (£m)	4.4	5.8	9.8
Direct employment	101	132	225
Indirect GVA (£m)	1.2	4.8	9.8
Indirect employment	32	129	263
Total GVA (£m)	5.6	10.6	19.6
Total jobs	133	261	488

Source: BiGGAR Economics

5.5 Capital Investment Impact

Each year the University of Gloucestershire invests in upgrading its estate and undertaking major capital investment projects. This expenditure supports economic activity, particularly within the local construction sector.

5.5.1 Methodology

The first step in estimating this impact was to estimate how much of the capital investment occurred in each study area.

The economic impact of capital investment as measured by GVA and employment supported, was estimated by applying economic assumptions appropriate to the sector as described in the previous section (i.e. turnover/GVA ratio, turnover/employee ratio, GVA multiplier and employment multipliers).

5.5.2 Inputs

The nature of capital investment will result in large fluctuations year to year and therefore an average across years is normally used in order to obtain a clearer picture of the impact of the University's investment. Between 2010/11 and 2014/15 the University of Gloucestershire has invested an average of £4.9 million a year in capital projects.

The supply chain for capital projects is generally more local than the total supplier expenditure so it was assumed that 50% of the supply chain for the capital investment projects was within Gloucestershire, 80% within the South West and 100% within the UK.

Table 5.8 – Key Assumptions for Capital Investment Impact 2013/14

Assumption			Value	Source
Activity Assumptions				
Average annual capital expenditure			£4,909,250	University of Gloucestershire Data
	% from Gloucestershire		19%	
	% from South West		31%	
	% from UK		100%	
Economic Assumptions				
Economic ratios			See Appendix	ONS Annual Business Survey 2012
Economic Multipliers				BiGGAR Economics

Source: BiGGAR Economics

5.5.3 Output

The total economic impact supported by capital investment by the University of Gloucestershire was £4.1 million GVA and 70 jobs in the UK. The impact in the South West was £1.1 million GVA and 20 jobs and in Gloucestershire the impact was £0.5 million GVA and 8 jobs. This impact is summarised in Table 5.9.

Table 5.9 – Capital Investment Impact 2013/14

	Gloucestershire	South West	UK
Direct GVA (£m)	0.4	0.6	1.9
Direct employment	6	10	32
Indirect GVA (£m)	0.1	0.6	2.2
Indirect employment	2	10	38
Total GVA (£m)	0.5	1.1	4.1
Total jobs	8	20	70

Source: BiGGAR Economics

5.6 Visits from Friends and Relatives (VFR)

Each year students and staff at the University of Gloucestershire will be visited by friends and family who would otherwise have little reason to visit the county. The money that these visitors spend during their stay helps to support economic activity in the local tourism sector.

5.6.1 Methodology

The first step towards estimating this impact was to estimate the number of visits from friends and family that students and staff will receive. VisitEngland and ONS compile data on the number of trips that both domestic and overseas visitors make to see friends and relatives⁷ each year. These statistics were used to provide an estimate of the number of visits each student and staff member at the University might received.

VisitEngland also publish data on the average expenditure of this type of visitor, which were used to estimate the total amount of additional expenditure. The economic impact of this expenditure was then estimated by applying economic assumptions for the tourism sector.

5.6.2 Input

There were 6.2 million domestic trips to the South West of England to visit friends and relatives in 2012 and 0.7 million overseas VFR trips. The population of the South West is 5.4 million and therefore each resident receives 1.15 domestic VFR visitor and 0.15 overseas VFR visitors each year. The overseas VFR tourists spent an average of £390 per trip and domestic VFR tourists spent an average of £113.

There were almost 7,800 staff and full time students at the University of Gloucestershire (this included 6,218 full-time on-campus students and 1,558 UK based staff). Of these students and staff 79% lived within Gloucestershire and 85% lived within the South West. It was assumed that all of the visitor expenditure would occur where the member of staff or student lived. The main assumptions used to estimate the impact of expenditure by visiting friends and relatives are given in Table 5.10.

Table 5.10 – Key Assumptions for VFR Impact 2013/14

Assumption		Value	Source
Activity Assumption			
Total staff and students		7,776	University of Gloucestershire Data
	% in Gloucestershire	79.2%	
	% in South West	85.4%	
	% in UK	100.0%	
Overseas VFR Trip per head		0.15	VisitEngland
Domestic VFR Trip per head		1.15	
Spend per Domestic VFR Trip		£113	
Spend per Overseas VFR Trip		£390	
Economic Assumptions			
Economic ratios		See Appendix	ONS Annual Business Survey 2012
Economic Multipliers			BiGGAR Economics

⁷ Visit England, *South West of England Regional Summary for 2010*
Economic Impact of the University of Gloucestershire

5.6.3 Output

The total economic impact from the expenditure of visiting friends and relatives of the University of Gloucestershire was £1.1 million GVA and 33 jobs in the UK. The impact in the south-west was £0.8 million GVA and 26 jobs, and in Gloucestershire the impact was £0.5 million GVA and 17 jobs. This impact is summarised in Table 5.11.

Table 5.11 – VFR Impact 2013/14

Impact	Gloucestershire	South West	UK
Direct GVA (£m)	0.4	0.4	0.5
Direct employment	13	14	17
Indirect GVA (£m)	0.1	0.4	0.6
Indirect employment	4	12	16
Total GVA (£m)	0.5	0.8	1.1
Total jobs	17	26	33

Source: BiGGAR Economics

5.7 Core Economic Impact Summary

The total economic impact of the core activities of the University of Gloucestershire is summarised in Table 5.12. This shows that in the UK the University supported 1,925 jobs and £90.9 million GVA. In the south-west the University supported almost 1,400 jobs and £69.0 million GVA, and in Gloucestershire it supported 1,110 jobs and £58.7 million GVA. These impacts are summarised in Table 5.2.

Table 5.12 – Core Economic Impact 2013/14

Impact	Gloucestershire	South West	UK
GVA (£m)			
Direct impact	47.7	47.7	47.7
Supplier impact	4.4	8.8	18.4
Staff expenditure impact	5.6	10.6	19.6
Construction impact	0.5	1.1	4.1
Tourism impact	0.5	0.8	1.1
Total GVA	58.7	69.0	90.9
Employment			
Direct impact	831	831	831
Supplier impact	121	239	502
Staff expenditure impact	133	261	488
Construction impact	8	20	70
Tourism impact	17	26	33
Total Employment	1,110	1,377	1,925

5.8 Potential Future Impact

The University of Gloucestershire's strategic plan places a strong emphasis on supporting business growth and economic development within the locality. One of the key ways in which the University will help to achieve this will be through the new Growth Hub. As discussed in section 4.1.1, the primary aim of the Growth Hub will be to boost the performance of businesses within the region but in doing so it is likely that the Growth Hub will also increase the operational impact of the University. It could do this in a number of different ways:

For example, it is likely that the additional services provided through the Growth Hub may lead to a requirement for the University to take on additional staff. It is also likely that this increase in activity will generate additional income for the University.

The Growth Hub business plan for example includes a target of increasing the amount of Knowledge Exchange Income that the University receives by 15% per year from 2014/15. Additional income could also be generated if the Growth Hub enables the University to attract new students.

All of this would help to increase the direct impact of the University. Any increase in expenditure associated with the Growth Hub would also increase the University's supplier impact while any increase in direct employment would lead to an increase in the staff expenditure impact.

6 STUDENT IMPACTS

This chapter considers the economic impacts generated by students at the University of Gloucestershire.

6.1 Impacts from Students

The impacts associated with the University of Gloucestershire's students include:

- student spending impacts – students have an impact on the economy through their spending in the same way that staff have an impact by spending their wages;
- students' part-time work – without students some businesses would not have the additional labour they require to increase their economic impact; and
- student volunteering – students add to the capacity of third sector organisations throughout Gloucestershire and the South-west.

A key impact of students is their increased productivity due to obtaining an undergraduate or postgraduate degree is considered in Chapter 8.

6.2 Student Expenditure Impact

During their time at university students spend money on a variety of goods and services. This expenditure supports economic activity elsewhere in the economy.

6.2.1 Methodology

This impact considers:

- how much students spend;
- where they spend it; and
- what they spend it on.

The amount of money that students spend was based on the cost of living from the Department of Business Innovation & Skills⁸, broken down into categories based on information provided on the University's website and adjusted to take account of whether they are undergraduate or post graduate which determines how long they spend studying in the area. In addition the analysis excludes money spent on University accommodation as this will have been accounted for in the University's turnover and is therefore part of the direct impact analysis.

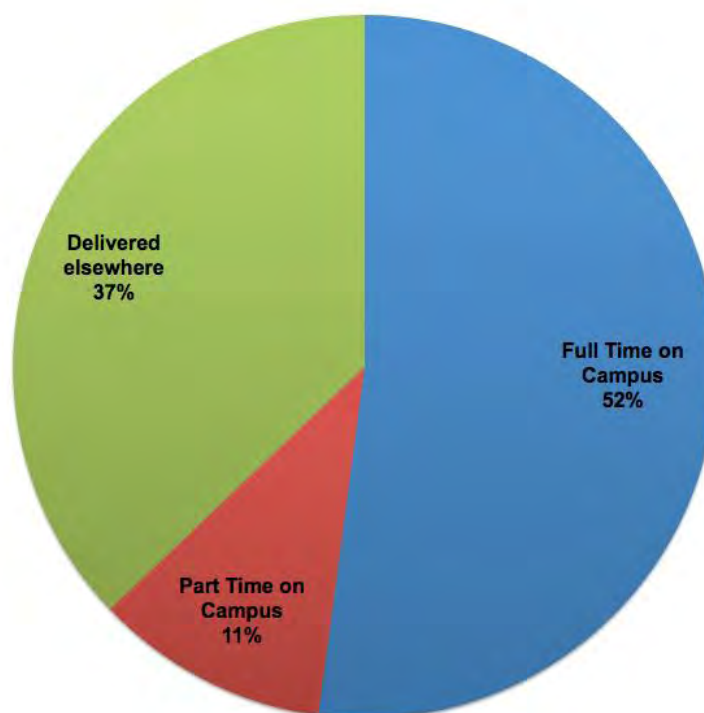
The economic impact of student spending as measured by GVA and employment supported, is estimated by applying economic assumptions appropriate to the sector as described in the previous section (i.e. turnover/GVA ratio, turnover/employee ratio, GVA multiplier and employment multipliers).

6.2.2 Inputs

The total student enrolment at the University of Gloucestershire in 2013/14 was 11,932. This included full time, part time and students on courses that are accredited by the University but are delivered elsewhere in either the UK or Overseas.

⁸ Department for Business Innovation & Skills, Student Income and Expenditure Survey 2011/12, June 2013

Figure 5.1 - Student headcount by method of study



The average annual expenditure of students was taken from the Department of Business, Innovation and Skills and is £11,382 per student. This is split between different economic sectors and not all students will spend on the different areas. For example students who are living in the home of their parent or guardian are likely to spend less on food and household goods. Also, the income associated with the expenditure on accommodation of institution maintained property is already included in the direct impact of the University and therefore excluded from this analysis. The split between spending areas and accommodation type are given in Table 6.1.

Table 6.1 – Expenditure by category and accommodation type

	Value	Institution maintained	Own home/ private rent	Parental/ Guardian
Food	£1,884	100%	100%	20%
Personal items	£1,840	100%	100%	100%
Entertainment	£1,082	100%	100%	100%
Household goods	£344	100%	100%	0%
Non-course travel	£1,567	100%	100%	100%
Other living costs	£37	100%	100%	100%
Housing costs	£3,767	0%	100%	0%
Travel	£402	100%	100%	100%
Books and equipment	£459	100%	100%	100%
Total	£11,382			

The key assumptions used to estimate the impact of student expenditure are given in Table 6.2.

Table 6.2 – Key Assumptions for Student Spending Impact 2013/14

Assumption	Value	Source
Activity Assumptions		
Full Time Students	6,612	University of Gloucestershire Data
% in Gloucestershire	83.5%	
% in South West	88.6%	
% in UK	100.0%	
Students living in...		
institution maintained property	23.4%	University of Gloucestershire Data
owned/rented property	57.5%	
parental/guardian home	19.1%	
Average annual student expenditure	£11,382	BIS
Economic Assumptions		
Economic ratios	See Appendix	ONS Annual Business Survey 2012
Economic Multipliers		BiGGAR Economics

6.2.3 Output

The total economic impact from the expenditure of students at the University of Gloucestershire was £40.8 million GVA and 925 jobs in the UK. The impact in the south-west the impact was £33.5 million GVA and 761 jobs and in Gloucestershire the impact was £22.7 million GVA and 518 jobs. This impact is summarised in Table 6.3.

Table 6.3 – Student expenditure Impact 2013/14

Impact	Gloucestershire	South West	UK
Direct GVA (£m)	18.3	19.2	21.5
Direct employment	418	439	491
Indirect GVA (£m)	4.5	14.3	19.3
Indirect employment	101	322	434
Total GVA (£m)	22.7	33.5	40.8
Total jobs	518	761	925

Source: BiGGAR Economics

6.3 Student Employment Impact

Many students work part-time while studying. The part-time work that students undertake also contributes to the economy. The economic impact of students' paid employment comes from the additional GVA of the businesses that employ them and the multiplier effect that these additional workers have on those businesses' supply chains.

6.3.1 Methodology

In order to estimate the impact of student part-time employment it was first of all necessary to establish how many students at the University of Gloucestershire work part-time work. This was done by multiplying the proportion of students who have part-time jobs in the UK by the total number of full-time students at the University of Gloucestershire. Next it was necessary to estimate the total amount of time that these students spend working part-time. This was done by multiplying the total number of students by the average number of hours worked by students in the UK.

It is likely that some of the part-time jobs undertaken by students would otherwise have been undertaken by other people living in the local area. Based on the labour market profile of the local area it was assumed that 50% of student labour was additional to the local economy.

Some of the students who work part-time are employed directly by the University of Gloucestershire. The impact of this activity was included as part of the core impact of the University so it was necessary to exclude these students here to avoid double counting. To do this, it was assumed that 5% of students who work part-time are employed by the University (i.e. approximately 180).

Using these assumptions it was possible to estimate the total number of additional hours work that students contribute to the local economy. These hours were then converted into full-time equivalent positions to give the number of jobs directly supported. The direct GVA of these jobs was then estimated by applying estimates of GVA/employee for sectors in which students are typically employed (such as retail and tourism). The indirect impact of this activity was then captured by applying appropriate multipliers.

6.3.2 Inputs

The main assumptions used to estimate the impact of student employment are given in Table 6.4. The starting point for estimating this impact was the number of full-time students based on campus. Students on the INTO Gloucestershire programme were then excluded because it was assumed that as these students only arrived in the UK recently they may not yet be familiar enough with the language and culture to take-up a part-time job.

The assumptions in Table 6.4 show that it was assumed that 57% of students at the University of Gloucestershire work part-time in line with a study undertaken for the National Union of Students⁹ (NUS). A previous study¹⁰ for the NUS found that on average students in part time employment worked 14 hours per week. Based on the youth employment rate in the local area and the relative size of the University of Gloucestershire it was assumed that 5% of the students who were employed worked for the University and that 50% of the labour supplied by the students would be additional to the area.

⁹ <http://www.timeshighereducation.co.uk/news/student-part-time-work-increases/2006956.article> accessed 17/10/14

¹⁰ NUS Scotland, *Still in the Red – Student Finance in 2010*, 2010

Table 6.4 – Key Assumptions for Student Employment Impact 2013/14

Assumption		Value	Source
Activity Assumptions			
Full Time Students (excludes INTO students)		6,218	University of Gloucestershire Data
	% of students who work	82.4%	
	% in South West	87.8%	
	% in UK	100.0%	
Proportion of students who work		57%	Times Higher Education, Sept 2013
Number of hours worked per week		14	NUS, Still in the Red 2010
Proportion of labour supply additional		50%	BiGGAR Economics Assumption
Proportion of working students employed at the University		5%	
Economic Assumptions			
Economic ratios		See Appendix	ONS Annual Business Survey 2012
Economic Multipliers			BiGGAR Economics

6.3.3 Output

The total economic impact from the part-time work undertaken by students at the University of Gloucestershire was £13.9 million GVA and 616 jobs in the UK. The impact in the south-west was £11.6 million GVA and 519 jobs, and in Gloucestershire the impact was £9.3 million GVA and 435 jobs. These impacts are summarised in Table 6.5.

Table 6.5 – Student employment impact 2013/14

Impact	Gloucestershire	South West	UK
Direct GVA (£m)	8.6	9.2	10.6
Direct employment	410	440	506
Indirect GVA (£m)	0.8	2.4	3.3
Indirect employment	26	80	110
Total GVA (£m)	9.3	11.6	13.9
Total jobs	435	519	616

Source: BiGGAR Economics

6.4 Student Volunteering Impact

When they are not studying, students at the University of Gloucestershire are encouraged to contribute to the local community by spending time volunteering with local charities and organisations. Feedback from students suggests that this not only provides valuable support to local charities but also helps to enhance students

“The university encouraged me to become an active member of the community through volunteering. This created a domino effect of opportunities leading to graduate employment complimenting my degree.”

Joseph Bills, BA Hons Graphic Design graduate

future career prospects (see box opposite).

The type of voluntary work undertaken by students at the University of Gloucestershire includes:

- **Streetwatch** – a local initiative that involves students patrolling St Paul’s twice a week with local residents and the police. Since the scheme started there have been impressive reductions in anti-social behaviour in the area;
- **Hub Club** - A weekly social session run by the Students’ Union for adults with learning difficulties including football, bingo and crafts.
- **Activity Time** - involves student volunteers working with children to develop literacy and communication skills;
- **Splash!** – a weekly swimming session for six to 11 year olds;
- **Tea Dance** - an the annual tea dance for older people in the community;
- **Raise and Give (RAG)** – an annual event that raised more than £3,000 for Hope Support Services in 2014;
- **Community Health** - a community health initiative that gives students an opportunity to contribute to a variety of different community health schemes;
- **Sport Volunteering** - provides the local community, in schools or clubs, with dedicated student volunteers to help deliver and manage new and existing sports opportunities.
- **Active Gloucestershire** - working closely with Active Gloucestershire the university provides student placement opportunities to help young people around the county achieve their sporting ambitions.

6.4.1 Methodology

The economic impact associated with the productivity of the student volunteering was estimated based on the industries in which these placements occurred. The students were assumed to be as productive as a worker in this sector and would save the third sector organisation from having to employ somebody. The sectors that volunteers are assumed to work in were:

- Arts, entertainment and recreation;
- Education; and
- Social work activities without accommodation.

The number of hours that a student was on a volunteer placement and the average number of hours annually an employed worker is in work enabled the staff output equivalent for each of the faculties to be estimated. The direct GVA was then estimated by multiplying this staff output equivalent by the GVA per member of staff in the appropriate sectors. The indirect impacts associated with this were estimated by applying the appropriate multipliers for these sectors.

6.4.2 Inputs

The students of the University of Gloucestershire contributed a total of 10,125 hours of volunteering activity, 66% of which was undertaken for local charities and organisations elsewhere in the UK. The key assumptions used to estimate the student volunteering impact are given in Table 6.6.

Table 6.6 – Key Assumptions for Student Volunteering Impact 2013/14

Assumption	Value	Source
Sourced Assumptions		
Total volunteering hours	10,125	University of Gloucestershire Data
% in Gloucestershire	58.5%	
% in South West	58.5%	
% in UK	65.5%	
Average weekly hours in sector	35	BiGGAR Economics Assumption
Economic Assumptions		
Economic ratios	See Appendix	ONS Annual Business Survey 2012
Economic Multipliers		BiGGAR Economics

6.4.3 Output

The total economic impact from the student spend of the University of Gloucestershire was £0.1 million GVA and 7 jobs in the UK. The impact in the south-west was £0.1 million GVA and 6 jobs, and in Gloucestershire the impact was £0.1 million GVA and 5 jobs. This impact is summarised in Table 6.7.

Table 6.7 – Student volunteering impact 2013/14

Impact	Gloucestershire	South West	UK
Direct GVA (£)	79,980	80,452	89,456
Direct employment	5	5	6
Indirect GVA (£)	6,608	20,141	26,874
Indirect employment	<1	1	1
Total GVA (£m)	0.1	0.1	0.1
Total jobs	5	6	7

Source: BiGGAR Economics

6.5 Student Impact Summary

The total economic impact of the students of the University of Gloucestershire is given in Table 5.12. This shows that in the UK the University supported 1,548 jobs and £54.8 million GVA. In the south-west students supported 1,286 jobs and £45.2 million GVA, and in Gloucestershire it supported 958 jobs and £32.1 million. These impacts are summarised in Table 6.8.

Table 6.8 – Impact Supported by Students 2013/14

Impact	Gloucestershire	South West	UK
GVA (£m)			
Student Spending	22.7	33.5	40.8
Student Part Time Work	9.3	11.6	13.9
Student Volunteering	0.1	0.1	0.1
Total GVA	32.1	45.2	54.8
Jobs			
Student Spending	518	761	925
Student Part Time Work	425	519	616
Student Volunteering	5	6	7
Total Jobs	958	1, 286	1,548

Source: BiGGAR Economics

6.6 Potential Future Impact

The main driver of all the impacts considered in this chapter is the number of students who attend the University. Any increase in student numbers would therefore result in an increase in the impacts summarised in Table 6.8.

The University of Gloucestershire is a small university by UK standards and has adopted a managed approach toward growth. This means that, while the University does not have any specific targets for increasing student numbers, it will take opportunities to increase student numbers should such opportunities arise. The new Growth Hub is one such opportunity, particularly for the University of Gloucestershire's Business School.

The Growth Hub has been designed specifically to provide a physical space that will encourage engagement between academics at the University (particularly those within the University's Business School) and the local businesses community. The modern and open space is highly conducive to networking and the free exchange of ideas, which makes it ideal for developing relationships between the county's business and academic communities.

It is intended that this engagement will inform curriculum development across a range of academic disciplines, which will help to ensure that courses delivered by the University are as relevant as possible to the needs of local industry. It is also expected that the Growth Hub will generate opportunities for greater engagement between students and local businesses, which should help to improve their employability after graduation.

All of this should help to make the University (particularly the Business School) more attractive to potential students. If this leads to an increase in student numbers then the impacts summarised in Table 6.8 would increase.

7 KNOWLEDGE TRANSFER IMPACTS

This chapter considers the economic impact of the knowledge transfer activity undertaken by the University of Gloucestershire. It also considers how the impact of this activity could increase in the future as a result of the new Growth Hub.

7.1 Knowledge Transfer and Economic Productivity

The knowledge transfer activity undertaken by the University of Gloucestershire includes:

- undertaking collaborative or contract research projects with businesses and other organisations;
- providing businesses and non-commercial clients with expert knowledge and advice through consultancy and by enabling businesses to access subsidised academic support through initiatives such as Innovation Vouchers;
- supporting businesses and other organisations to become more productive by increasing the skills of their staff through continuing professional development (CPD);
- supporting the development of graduate start-up companies and spin-outs based on intellectual property developed at the University;
- allowing businesses and other non-commercial organisations to access University facilities and equipment; and
- enabling businesses to access intellectual property developed by the University through licensing agreements.

Knowledge transfer activity generates economic impact by enabling the companies and organisations that the University works with to improve some aspect their performance. The type of performance improvement realised will depend on the type of project undertaken and the nature of the client but the starting point for estimating the impact of this activity is the assumption that clients will not invest in support from the University unless they expect the support provided to generate positive returns.

For businesses these returns can often be measured by an increase in the value of sales or improvements in productivity. The case study provided in Figure 7-1 for example describes how the University of Gloucestershire is supporting a local company with product development, which might be expected to lead to future increases in sales value.

At present however most of the knowledge transfer undertaken by the University of Gloucestershire is not undertaken for businesses but for non-commercial clients. Although these types of clients are generally not driven by a profit motive and financial returns may not be the main motivation for working with the University, it is reasonable to expect that these clients would expect to realise some level of financial return.

For example, the University of Gloucestershire has a strong reputation in the field of sustainability research. If knowledge transfer activity undertaken by the University were to enable clients to implement changes that would help them to make more efficient use of resources then this could result in cost savings. Similarly the University also has a strong reputation in the field of primary school education. If knowledge transfer activity undertaken by the University were to enable education authorities to implement changes in teaching practice that allowed teachers to make more efficient use of their time then this could also help to improve productivity – and ultimately result in cost savings.

Although the primary motivation for working with the University for non-commercial clients may not be financial, evidence from elsewhere suggests that financial benefits are often an

unintended consequence. Such cost savings represent improvements in the productivity of the local economy. For this reason this section considers the economic impact of knowledge transfer activity undertaken for both commercial and non-commercial clients.

7.1.1 Future Potential

Although the majority of knowledge transfer activity undertaken by the University of Gloucestershire is currently delivered for non-commercial clients, the development of the new Growth Hub is expected to change. The new Growth Hub aims to provide extensive opportunities to increase the level of engagement between the University and the local business community. For example, an initial target for the Growth Hub is to develop and implement ten new business support services in collaboration with the GFirst LEP by the end of the academic year 2014/15.

This is likely to lead to a substantial increase in many of the areas of activity identified above, which would increase in the value of the impacts considered in this chapter. To assist the University in fulfilling its performance monitoring requirements, this chapter therefore not only quantifies the impact of current activity but also identifies areas where the Growth Hub could increase future impact.

7.2 Contractual Services

One of the ways in which the University of Gloucestershire supports local businesses and other organisations is by undertaking services on a contractual basis that partners may not have the skills, capacity or facilities to undertake in-house. These services include contract research, consultancy and continuous professional development (CPD) training.

7.2.1 Methodology

It is reasonable to assume that the businesses that commissioned contract research (or consultancy) projects would only have done so if they expected these projects to generate positive returns. Detailed information about the level of these returns is not available for the University of Gloucestershire's clients; however, an estimate can be made based on the findings of research from similar activity elsewhere.

BiGGAR Economics has evaluated the economic impact of several knowledge transfer initiatives around the UK¹¹. These initiatives have covered a range of different types of engagement from small consultancy projects and access to equipment and facilities through to company sponsored PhDs undertaken for both commercial and non-commercial organisations. The findings of these studies have shown that businesses and organisations investing in these types of activities receive an average direct return on investment of 360%. That is that every £1 invested by businesses generated £3.60 GVA in direct economic benefits.

The GVA impact of contractual services (contract research, consultancy and CPD) provided by the University of Gloucestershire was therefore estimated by multiplying the amount spent by clients on these services by £3.60. The employment impact was then estimated by dividing the direct GVA impact by GVA/employee in relevant sectors and the indirect effects were captured by applying appropriate multipliers

¹¹ Most recently this has included an economic impact study on behalf of Interface, the organisation responsible for facilitating engagement between industry and Scotland's higher education institutions.

7.2.2 Input

In 2012/13 the University of Gloucestershire undertook 16 collaborative research projects with a combined value of £170,000. The majority of these contracts were with non-commercial organisations and none were with SMEs.

Table 7.1 – Contract Research

Contract Research	2009-2010	2010-2011	2011-2012	2012-2013
Number of contracts with SMEs	0	0	0	0
Value of contracts with SMEs	0	0	0	0
Number of contracts with other commercial businesses (non-SME)	1	2	3	2
Value of contracts with other commercial businesses (non-SME)	£8,000	£18,000	£12,000	£22,000
Number of contracts with non-commercial organisations	5	27	14	14
Value of contracts with non-commercial organisations	£177,000	£310,000	£321,000	£148,000
Total Number of Contracts	6	29	17	16
Total Value of Contracts	£185,000	£328,000	£333,000	£170,000

Source: HEB-CI Survey

7.2.3 Output

Using the methodology described in section 7.2.1, it was estimated that the total economic impact from the contract research undertaken by the University of Gloucestershire in 2012/13 was £1.1 million GVA and 18 jobs in the UK. The impact in the south-west it was £0.8 million GVA and 13 jobs, and in Gloucestershire the impact was £0.4 million GVA and 7 jobs. This impact is summarised in Table 7.2.

Table 7.2 – Contract Research Impact

	Gloucestershire	South West	UK
Direct GVA (£m)	0.4	0.5	0.6
Direct employment	6	8	10
Indirect GVA (£m)	0.1	0.3	0.5
Indirect employment	1	5	8
Total GVA (£m)	0.4	0.8	1.1
Total jobs	7	13	18

Source: BiGGAR Economics

7.3 Consultancy

The University of Gloucestershire also delivers knowledge transfer through consultancy projects. These projects allow academics and researchers at the University to apply their

skills, knowledge and expertise to a particular challenges or problems facing local businesses or other organisations.

The relationship between the parties involved in these projects is a commercial one, with the main objective to produce a report or other output for the business client. The primary reason for businesses to undertake consultancy projects with Universities is to benefit from the unique knowledge that they have and in doing so generate financial returns for the client. An example of how bespoke consultancy projects have been used to assist businesses is described in Figure 7-1.

Figure 7-1 – Versarien Technologies

In 2014 the University of Gloucestershire began working with Forest-of-Dean based company Versarien Technologies to model the qualities of its heat transfer materials.

Versarien was established in 2010 and since then has experienced rapid growth and won several awards for manufacturing and innovation. The company develops and designs heat transferring materials that can be used in a wide variety of applications to help cool internal elements and speed up processing in computers and other electrical devices.

The research being undertaken by the University of Gloucestershire draws on skills and expertise within the University's School of Computing and Technology. The work is expected to help the company to continue its product development and support its on-going growth.

This project is one of a number of innovative projects that have recently been commissioned by local businesses and is an example of how the knowledge and expertise within the University can be applied to real business issues.

Source: BiGGAR Economics based on information from the UoG

7.3.1 Methodology

The methodology for estimating the economic impact of consultancy contracts undertaken by the University of Gloucestershire was the same as that used to estimate the impact of contract research, which is described in Section 7.2.1.

7.3.2 Input

The number and value of consultancy contracts delivered by the University between 2009 and 2013 is presented in Table 7.3. This shows that the total number of consultancy contracts undertaken by the University of Gloucestershire has more than doubled over the period 2009-2013, from 26 contracts to 63 contracts. In 2013 the majority of these contracts were delivered for non-commercial organisations. The number of contracts delivered for commercial businesses has also increased over this period but the value of these contracts has fallen significantly.

Table 7.3 – Consultancy Contracts

	2009-2010	2010-2011	2011-2012	2012-2013
Number of contracts with SMEs	11	9	4	17
Value of contracts with SMEs	£492,000	£349,000	£85,000	£93,000
Number of contracts with other commercial businesses (non-SME)	1	2	3	7
Value of contracts with other commercial businesses (non-SME)	£6,000	£35,000	£6,000	£22,000
Number of contracts with non-commercial organisations	14	11	26	39
Value of contracts with non-commercial organisations	£95,000	£86,000	£101,000	£121,000
Total Number of Contracts	26	22	33	63
Total Income from Consultancy Contracts	£593,000	£470,000	£192,000	£236,000

Source: HEB-CI Survey

7.3.3 Output

The total economic impact from consultancy contracts undertaken by the University of Gloucestershire was £1.5 million GVA and 25 jobs in the UK. The impact in the south-west was £1.1 million GVA and 19 jobs, and in Gloucestershire the impact was £0.6 million GVA and 10 jobs. These impacts are summarised in Table 7.4.

Table 7.4 – Consultancy Impact 2013/14

	Gloucestershire	South West	UK
Direct GVA (£m)	0.5	0.7	0.8
Direct employment	8	11	14
Indirect GVA (£m)	0.1	0.4	0.7
Indirect employment	2	8	11
Total GVA (£m)	0.6	1.1	1.5
Total jobs	10	19	25

Source: BiGGAR Economics

7.3.4 Future Potential

Business consultancy is one of the areas that has the potential to increase significantly as a result of the new Growth Hub. It is likely that much of this potential increase could be delivered through initiatives such as the Innovation Vouchers Project, a case study of which is provided in Figure 7-2 – Innovation Vouchers Project.

Figure 7-2 – Innovation Vouchers Project

The University of Gloucestershire is one of 14 delivery partners in a collaborative project led by University College Falmouth to deliver Innovation Vouchers in the south-west of England. The Innovation Voucher scheme aims to encourage start-up, micro, small or medium-sized businesses in the county to take advantage of the opportunity to gain new knowledge to help them innovate, develop and grow.

Innovation Vouchers provide subsidised academic and research support from the University of Gloucestershire to develop, expand and investigate new business opportunities. Innovation Vouchers offer financial support for projects ranging from £1,000 to £10,000, which can be used to support a variety of different types of activity in Gloucestershire and beyond including:

- consultancy from academic specialists;
- research and development support;
- use of specialist facilities and equipment;
- innovation or technology audits;
- CPD or short-courses for business employees;
- design, prototyping and testing of new products, services or processes; and
- specialist academic networking or events.

Source: BiGGAR Economics based on information provided by the UoG

The Growth Hub business plan includes a target of undertaking 750 new research and business consultancy projects aligned with GFirst LEP sector priorities (particularly in retail and manufacturing) by the end of the academic year 2016/17. This represents a substantial increase in current level of activity in this area. If this increase is realised then it would be reasonable to expect the economic impact summarised in Table 7.4 to increase substantially.

7.4 Continuing Professional Development

As well as providing qualified graduates for the labour market, the University of Gloucestershire plays an important role in developing the skills of the existing workforce by providing CPD for businesses and other non-commercial organisations. CPD is the on-going process of acquiring and updating work related skills, knowledge and experience throughout professional life.

CPD courses offered by the University help professionals in a variety of fields to undertake their jobs more effectively and efficiently, which results in cost savings and productivity improvements for the business or organisation that they work for. Businesses and organisations will only invest in CPD for their staff if they anticipate that this will generate positive commercial returns.

One example of the University of Gloucestershire's CPD activity is a new engineering course that was launched at the start of the 2014/15 academic year. This is described in Figure 7-3

Figure 7-3 - New engineering course

The objective of the course is to up-skill employees for future career progression and provide businesses with the opportunity to develop skills and knowledge within the workforce. The course will enable students to combine skills in mechanical engineering, electronic engineering, computer enabled technology, and manufacturing and engineering to meet the requirements for modern industry.

This course has specifically been designed in conjunction with engineering and manufacturing companies in the region and the Local Enterprise Partnership in order to ensure that it meets the requirements of the local economy. In particular, the course develops the academic knowledge of individuals who may not have come through the traditional graduate route into engineering, reflecting the needs of businesses in the area.

In providing CPD courses tailored to suit the needs of businesses in the region, the University supports the skills development of the existing workforce. This has an economic impact as it results in cost savings and productivity improvements for businesses, generating additional turnover and supporting business growth.

Source: BiGGAR Economics based on information provided by the UoG

7.4.1 Methodology

The methodology for estimating the economic impact of CPD contracts undertaken by the University of Gloucestershire is the same as that for collaborative and contract research, which was described in Section 7.2.1.

7.4.2 Input

Table 7.5 indicates that CPD activity undertaken by the University of Gloucestershire has increased since 2009/10. In 2012/13 total revenue from CPD was almost £1 million. The majority of CPD undertaken by the University is with individuals, commercial businesses (not SMEs) and non-commercial organisations.

Table 7.5 – Continuing Professional Development

	2009-2010	2010-2011	2011-2012	2012-2013
CPD for SMEs	0	0	0	£32,000
CPD for other commercial businesses (non-SME)	0	0	£174,000	£287,000
CPD for other non-commercial organisations	£411,000	£374,000	£151,000	£282,000
CPD for individuals	£167,000	£223,000	£231,000	£328,000
Total Revenue from CPD	£578,000	£597,000	£556,000	£929,000
Total learner days of CPD courses delivered	233	1,168	1,156	2,844

Source: HEB-CI Survey

7.4.3 Output

The total economic impact from CPD contracts undertaken by the University of Gloucestershire was £6.0 million GVA and 99 jobs in the UK. The impact in the south-west was £4.4 million GVA and 73 jobs, and in Gloucestershire the impact was £2.4 million GVA and 40 jobs. These impacts are summarised in Table 7.6.

Table 7.6 – Continuing Professional Development Impact 2013/14

	Gloucestershire	South West	UK
Direct GVA (£m)	2.0	2.7	3.3
Direct employment	32	43	54
Indirect GVA (£m)	0.4	1.7	2.6
Indirect employment	7	30	45
Total GVA (£m)	2.4	4.4	6.0
Total employment	40	73	99

Source: BiGGAR Economics

7.4.4 Future Potential

CPD is another area that has the potential to increase significantly as a result of the new Growth Hub. The Growth Hub business plan includes a target of developing 20 new teaching programmes or work-based learning activities that are aligned with GFirst LEP sector priorities by the end of the academic year 2015/16.

Aligning these programmes with sectors that are important to the local economy should ensure that they are as relevant as possible to local businesses, which should ensure a high level of uptake. Ultimately this should be reflected in the economic impacts that the University delivers for the local economy through CPD activity, which were summarised in Table 7.8.

7.5 New Company Formation

Another important way in which the University of Gloucestershire supports the development of local business is by supporting entrepreneurial graduates to start up in business. By generating wealth and supporting employment these businesses help to grow the local economy. An example of this is the Student Media Project, a professional services business established and run by students at the University to enable local businesses to access media related expertise from within the University. A case study of the Student Media Project is provided at Figure 7-4.

Figure 7-4 – Student Media Project

The University of Gloucestershire is often asked to help companies to produce video, audio and interactive media for their websites. To fulfil this demand, the University setup the Student Media Project (SMP). The SMP uses students and recent graduates to deliver media projects for companies at realistic and competitive prices.

Companies that propose new projects are first invited to discuss their idea with the Head of School. Once approved the project is then passed to the Production Team for development. The Production Team then works closely with the business to ensure that the final output meets their requirements.

The SMP is overseen by graduate students who commission undergraduates to work on individual projects. For larger, more complex projects the team also commission staff and/or freelance media professionals to work alongside the students. To date the SMP has largely focused on web based projects but is now in the early stages of production on a small number of broadcast products.

In 2013/14 the SMP generated around £80,000 turnover. This income represents investment by the SMP's clients in media products that they expect to generate additional value for their business. The projects also help the students involved to gain valuable commercial experience and to begin developing professional networks, which should help to boost their employability after they graduate.

Source: BiGGAR Economics based on information provided by the UoG

7.5.1 Methodology

Turnover per employee is typically lower in newly formed companies than established companies so the starting point for estimating the impact of newly formed businesses was the total turnover they generate. This was converted into GVA using a turnover/GVA ratio appropriate to the sector in which the business operates.

New businesses will also have an impact elsewhere in the economy as a result of their expenditure on supplies and the expenditure of their staff. To capture these effects, appropriate multipliers were then applied to the direct GVA in order to estimate the total impact.

7.5.2 Input

Table 7.7 provides information about graduate start-ups of the University of Gloucestershire. In 2012/2013 the University had 6 graduate start-ups, which between them supported 8 fte jobs and generated a total turnover of £128,000. Half of these graduate start-ups have survived longer than three years.

Table 7.7 – Graduate Start-Ups

	2009-2010	2010-2011	2011-2012	2012-2013
Number of Graduate Start-ups	3	4	8	6
Estimated Employment of Graduate Start-ups (fte)	5	4	13	8
Estimated Turnover of Graduate Start-Ups	£44,000	£50,000	£150,000	£128,000

Source: HEB-CI Survey

7.5.3 Future Potential

The new Growth Hub has created an opportunity to significantly increase the number of new business starts in the county. This is likely to include new graduate start-up

companies as well as spin-out companies based on intellectual property developed at the University and spin-in companies that are attracted to the area by the support provided by the Growth Hub.

The Growth Hub will support the formation of new companies by enabling entrepreneurs to access practical business support services. An example of the type of support that will be provided to young businesses is the incubation network being led by Innovation Gloucestershire. A case study of this is provided in Figure 7-5.

Figure 7-5 – Innovation Gloucestershire Project

In February 2013 the University of Gloucestershire secured £0.4 funding from the EU toward a £0.8 million project to deliver a network of business incubation facilities across Gloucestershire.

The Innovation Gloucestershire Project was developed to help address a chronic shortage of incubation support across the county and a need to ensure that young businesses are able to access all the support they need to successfully navigate the initial start-up and subsequent growth phases of development. The project will achieve this by providing four incubation sites in Cheltenham and Gloucester, and a range of face-to-face and virtual start-up business support.

The overarching aim of Innovation Gloucestershire is to provide an integrated incubation service to assist young businesses to improve their performance, to create new jobs, to offer new options for local graduates, and to support collaborative research and development projects across the county. The focus of this proposal is on supporting businesses that have the potential to add to the county's economic profile including areas focused on innovation, design, creativity, IT, renewable energy and environmental technology.

Source: BiGGAR Economics based on information provided by the UoG

It is reasonable to expect that the business support that will be delivered through the Growth Hub, including the incubation facilities being provided through the Innovation Gloucestershire project, should increase the level of new company formation in the county. If this occurs then the impact summarised in Table 7.7 would almost certainly increase.

7.5.4 Output

Using the methodology described in 7.5.1, it was estimated that the total economic impact from start-ups founded by students of the University of Gloucestershire was £0.1 million GVA and 15 jobs in the UK. The impact in the South West was £0.1 million GVA and 11 jobs, and in Gloucestershire the impact was £0.1 million GVA and 6 jobs. These impacts are summarised in Table 7.8. These impacts are summarised in Table 7.8.

Table 7.8 –Impact of graduate start-ups 2013/14

	Gloucestershire	South West	UK
Direct GVA (£)	45,992	61,323	76,654
Direct employment	5	6	8
Indirect GVA (£)	9,893	39,972	59,959
Indirect employment	1	4	7
GVA (£m)	0.1	0.1	0.1
Jobs	6	11	15

Source: BiGGAR Economics

7.6 Student Placements

Student placements are central to effective knowledge exchange between universities and businesses. They not only provide businesses and other organisations with an opportunity to take advantage of the knowledge and skills students have acquired while studying, but also enhance students future employability by enabling them to apply what they have learned in a real business.

The economic impact of student placements includes:

- the value of the work undertaken by the student during the placement; and
- the value of the new skills and experience gained by the student during the placement to any future employer.

This section quantifies the impact of the first of these effects. The second of these effects is considered further in chapter 8.

7.6.1 Methodology

It is reasonable to assume that students starting a placement will generally not be able to undertake valuable work immediately because they will require some time to become familiar with their host employer. For this reason, this section only quantifies the impact of long-term placements and shorter placements that were undertaken as a part of a series of placements over the course of a degree. For the shorter-term placements quantified it was assumed that students would start making a contribution to their host employer after completing their second or third placement.

To estimate the economic impact of these placements it was first necessary to establish the total duration of the placements. The total amount of time spent on placements was then converted into an equivalent number of full time staff in order to provide an estimate of the number of jobs supported. The GVA impact of this was estimated by multiplying total employment by an estimate of GVA/placement student, which was assumed to be one third of that of a fully trained employee. Multipliers appropriate to the sectors in which each placement took place were then applied to capture the effects of subsequent spending rounds.

7.6.2 Input

The University of Gloucestershire provided data about the number and duration of student placements. This provided a breakdown of the placements by title and the year group of the students involved. Analysis of this data showed in total in 2013/14, 3,142 students undertook placements lasting a total of 120,058 days. The placements ranged from one week to one year in length and some students completed more than one placement.

Those placements that met the criteria described in 7.6.1 were used in the assessment. Applying these criteria found that 81,515 placement days would have contributed to the organisations the students were placed with.

Table 7.9 – Key Assumptions for Student Placement Impact 2013/14

Value Source		
Activity Assumptions		
Total value generating days	81,515	BiGGAR Economics Assumption based on data from University of Gloucestershire
Proportion of placements in...		
... Gloucestershire	42.5%	
... South West	68.0%	
... UK	85.0%	
Placement productivity as % worker	33%	BiGGAR Economics Assumption
Economic Assumptions		
Economic Ratios	See Appendix	ONS Annual Business Survey 2012
Economic Multipliers		BiGGAR Economics Assumption

7.6.3 Output

Using the method set out in 7.6.1 it was estimated that the total economic impact from the placements undertaken by students of the University of Gloucestershire was £4.1 million GVA and 31 jobs in the UK. The impact in the south-west was £3.1 million GVA and 21 jobs, and in Gloucestershire the impact was also £1.7 million GVA and 4 jobs. This impact is summarised in Table 7.10.

Table 7.10 – Student Placement impact 2013/14

	Gloucestershire	South West	UK
Direct GVA (£m)	1.6	2.5	3.2
Direct employment	n/a	n/a	n/a
Indirect GVA (£m)	0.1	0.6	0.9
Indirect employment	4	21	31
Total GVA (£m)	1.7	3.1	4.1
Total employment	4	21	31

Source: BiGGAR Economics

7.6.4 Future Potential

The new Growth Hub aims to increase student and graduate participation in University led employability initiatives by 15% a year. Student work placements are one component of the employability initiatives delivered by the university so achieving this target should result in an increase in the impact summarised in Table 7.10.

Increasing the number of students participating in student placements should also have an effect on the future productivity of graduates and the extent of the contribution they are able to make to the local economy after graduating. These effects are considered further in section 8.

7.7 Knowledge Transfer Partnerships (KTPs)

The Knowledge Transfer Partnership (KTP) programme is a UK wide programme that is designed to facilitate knowledge exchange between academia and industry. The programme provides support for recent graduates to work with a UK based company on a long-term (usually three years) project designed to address a specific business challenge.

7.7.1 Methodology

A strategic review of the KTP programme¹² undertaken in 2010 found that on average, KTPs undertaken in South West England contributed £913,000 GVA to the economy, equivalent to an annual impact of £152,000 in the six years after the KTP is completed. It is assumed that the annual impacts for the duration of the project are only 10% of the impacts after the KTP has been completed, as the outputs of the knowledge exchange will not have been realised. The same study found that on average, each KTP projects support the creation of three jobs.

By multiplying the impacts from this strategic review by the number of KTP projects undertaken by the University it was possible to estimate the economic impact that the KTPs have in each area. The location of the impact was assumed to be in the same study area that the partner business was located. The study was for projects undertaken up to 2009 and so in order to assess the impact in 2013 it was necessary to apply inflation.

7.7.2 Input

Information about each of the educational institutions that participate in the Knowledge Transfer Partnership is available on the KTPOnline website. This shows that there have been 23 KTPs completed through the University of Gloucestershire in the past six years and 9 of these were in Gloucestershire and the South West. It also shows that there is one on-going KTP with a company based in Gloucestershire.

The key assumptions used to calculate the KTP impact are shown in Table 7.11.

Table 7.11 – Key Assumptions for KTP Impact 2013/14

	Value	Source
Activity Assumptions		
Ongoing KTPs	1	KTPOnline Partnership Info Database
KTPs completed in last 6 years	23	
in Gloucestershire	9	
in South West	9	
in UK	23	
Annual GVA per completed KTP	£152,167	Regeneris Consulting
Annual GVA per ongoing KTP	£15,217	BiGGAR Economics Assumption
Economic Assumptions		
Inflation between 2009 and 2013	17%	Bank of England Inflation Calculator

¹² Regeneris Consulting: Knowledge Transfer Partnerships, Strategic Review, 2010
Economic Impact of the University of Gloucestershire

7.7.3 Output

Using the method described in section 7.7.1 it was estimated that the total economic impact of KTPs undertaken by the University of Gloucestershire was £4.1 million GVA and 69 jobs in the UK. The impact in the South West was £1.6 million GVA and 27 jobs, and in Gloucestershire the impact was also £1.6 million GVA and 27 jobs.

Table 7.12 – Knowledge Transfer Partnership Impact 2013/14

	Gloucestershire	South West	UK
Total GVA (£m)	1.6	1.6	4.1
Total Jobs	27	27	69

Source: BiGGAR Economics

7.8 Summary Quantifiable Knowledge Transfer Impact

The total economic impact of the knowledge transfer activity undertaken by the University of Gloucestershire is given in Table 7.13. This shows that in the UK the University supported 257 jobs and £16.9 million GVA. In the south-west the University supported 164 jobs and £11.2 million GVA and in Gloucestershire it supported 94 jobs, and £6.9 million. These impacts are summarised in Table 7.13.

Table 7.13 – Impact of knowledge transfer activity 2013/14

	Gloucestershire	South West	UK
GVA (£m)			
Collaborative and Contract Research	0.4	0.8	1.0
Consultancy	0.6	1.1	1.5
Start Up Companies	0.1	0.1	0.1
CPD	2.4	4.4	6.0
Student Placements	1.7	3.1	4.1
KTPs	1.6	1.6	4.1
Total GVA	6.9	11.2	16.9
Employment			
Collaborative and Contract Research	7	13	18
Consultancy	10	19	25
Start Up Companies	6	11	15
CPD	40	73	99
Student Placements	4	21	31
KTPs	27	27	69
Total Jobs	94	164	257

Source: BiGGAR Economics

8 GRADUATE PRODUCTIVITY IMPACTS

This section describes the additional value that graduates from the University of Gloucestershire add to the UK economy as a result of the education they receive.

8.1 Graduate Productivity

One of the main ways in which knowledge is transferred from the University of Gloucestershire into industry is when its graduates start working and begin applying what they have learned in the work place. The skills students learn and the experiences they have while at University directly enhance their future productivity. This enables them to contribute more to their employer and generate a greater benefit for the UK economy than they would otherwise be able to.

The GVA of this productivity gain includes the additional profits that graduate employers are able to generate by employing graduates and the additional employment costs they are willing to pay in order to generate these additional profits.

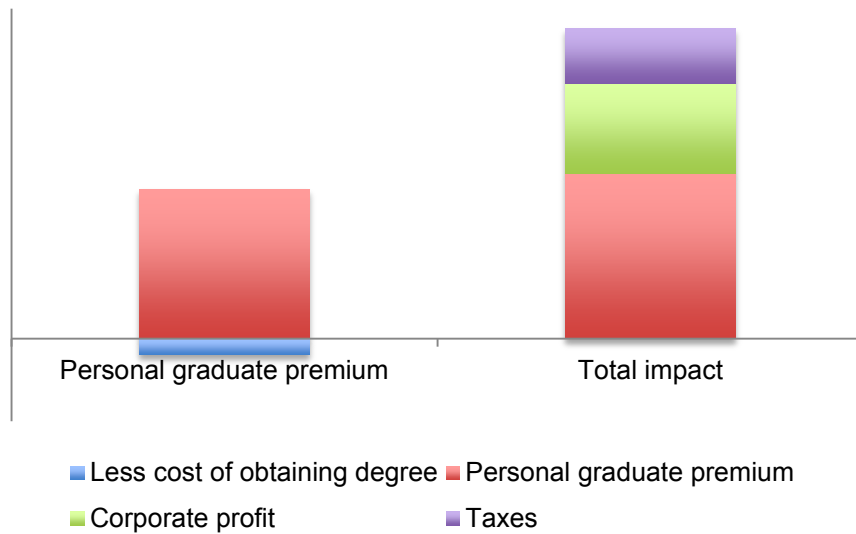
The subject of graduate earnings premiums has been well researched so information about the earnings premium of graduates is readily available and can be used to provide a measure of the additional contribution graduates make to the economy each year. Unfortunately information about the additional profits of graduate employers is not readily available so the impact presented in this section is likely to underestimate the true productivity impact of learning.

Information about the graduate premium for different subject areas is provided in a research paper produced by the Department for Business Innovation & Skills¹³, which considered data from the Labour Force Survey between 1996 and 2009. The analysis considered the after tax earnings of a graduate compared to the after tax earnings of a non-graduate. The direct and indirect costs were then subtracted from the gross graduate premium for each degree subject to give the net graduate premium. In this way the total graduate premium gives the combined personal economic benefit that the years graduates will obtain rather than the increase in national productivity associated with the degree, which will be higher.

The UK wide benefits from the increased productivity of graduates will also include the corporate profit associated with each graduate as well as the taxes paid to the Treasury.

¹³ Department for Business Innovation & Skills (June 2011), *The Returns to Higher Education Qualifications*.

Figure 8-1 – Personal Graduate Premium Benefit Vs. Economic Benefit



8.2 Degreeplus

Although the main determinant of the graduate premium realised by different students is the subject studied at University, another important factor is the skills graduates acquire while studying. Some of these skills may be technical and relate specifically to the degree subject area but others are more general “soft skills” such as communication and team work that are highly valued by employers. These type of skills enhance the contribution that newly qualified graduates will be able to make to a new employer, which should help them to secure a higher starting salary than they might otherwise be able to and increase the total value of their graduate premium.

The University of Gloucestershire supports a range of activity designed to give students the opportunity to enhance their future employability through the Degreeplus programme. The University also enables students to demonstrate the skills they have acquired during their time at university by participating in the Degreeplus Award scheme.

The Degreeplus programme consists of three complementary strands of activity:

- work experience;
- skills development; and
- career management.

8.2.1 Work Experience

Students at the University of Gloucestershire have a variety of opportunities to gain work experience while they study. A large number of courses include placement modules (see section 7.6) and the University also runs an internship programme, which provides a range of flexible and varied 80-hour internship projects within the local community. Feedback from students who have undertaken work placements while at University confirms that this is an effective way of enhancing graduate skills.

“My placement at GE Aviation has given me strong first-hand skills to further my career in Human Resources.”

Lucy James, BA (Hons)
Business Management

Some students are also able to gain work experience by working for the University. For some students this involves working as a student ambassador or student mentor, to share experience of studying at University with school pupils and college students. Other students are employed as residential assistants to provide on-site support to other students living in student accommodation. For students who wish to gain work-experience outwith the University, the University also runs the SU JobShop, which advertises a range of local part-time and temporary paid work opportunities.

8.2.2 Skills Development

The University of Gloucestershire also supports students to develop important employability skills such as:

- Communication and interpersonal skills;
- Teamwork and leadership;
- Problem solving;
- Numeracy and IT; and
- Business continuity and awareness.

8.2.3 Career Management

The Degree^{plus} team at the University of Gloucestershire also helps students to acquire career management skills through the development of a personal career plan. The aim of a personal career plan is to ensure that, by the time a student graduates, he or she has a clear idea about their next step and is well prepared to take it.

8.3 Quantifying the Graduate Premium

This section considers the value that graduates from the University of Gloucestershire add to the UK economy each year. The starting point for doing this was therefore to exclude students who leave the UK after graduation since these graduates will benefit the economies where they live rather than the UK.

This was done using data provided by the University of Gloucestershire on the destinations of UK domiciled students and a study undertaken by the Department for Business Innovation and Skills¹⁴, which suggests that approximately 20% of overseas students remain in the UK after graduation.

The earnings premium realised by individual graduates is largely determined by the subject they choose to study at University. The impact associated with graduates from the University of Gloucestershire was therefore estimated by applying the graduate premium for different degree subjects to the number of graduates in each subject area. The assumptions used to do this are provided in Table 8.1.

¹⁴ Department for Business Innovation and Skills, *Tracking International Graduate Outcomes 2011, January 2012*

Table 8.1 – Graduate Premium by Degree Subject

	Graduate Premium (£)	Graduates from University 2013/14*
Architecture, building and planning	125,337	17
Biological sciences	65,788	473
Business and administrative studies	115,295	424
Creative arts and design	5,945	342
Education	115,843	465
Historical and philosophical studies	21,843	81
Law	161,436	76
Linguistics, classics and related	49,036	105
Mass communication	19,460	136
Mathematical and computing sciences	136,629	115
Physical /environmental sciences	92,063	37
Social studies	98,793	261
Subjects allied to medicine	145,633	5
Total/average	101,442	2,534
Postgraduate degree	50,195	622

Source: Department of Business, Innovation and Skills, The Returns to Higher Education Qualifications, 2011 * University of Gloucestershire Data Received

In this way it was estimated that the total graduate premium across the UK in 2012/13 amounted to £193.7 million. The impact within each study area was estimated by applying assumptions about the proportion of graduates who remain in each study area after graduation to the total impact.

Table 8.2 – Graduate Premium by Study Area (£m)

	Gloucestershire	South West	UK
Location of Graduates	23%	35%	82%
Total Graduate Premium	53.5	83.1	193.9

Source: BiGGAR Economics

8.3.1 Future Potential

The data presented above implies that the average graduate premium associated with the University of Gloucestershire is £73,482, 72% of the UK average. This is largely due to the subject choices made by students at the University.

The new Growth Hub has the potential to increase the average graduate premium associated with a degree from the University of Gloucestershire in a number of different ways.

The first way would be by influencing the career choice of prospective students. The University of Gloucestershire's Business School is at the heart of the Growth Hub and is expected to play a key role in designing and delivering the support that the Hub will

provide to businesses. This is expected to deliver benefits for the Business School as well as the businesses it supports.

For example, the Growth Hub will create opportunities for students at the Business School to engage directly with the business community and apply their learning directly to real business challenges. This should help to enhance the employability of students after they graduate, which should make studying at the Business School more attractive to potential students.

As illustrated in Table 8.1, business and administrative degrees are associated with a higher than average graduate premium. If the new Growth Hub were to lead to an increase in the number of students attending the Business School then this would therefore help to increase the average graduate premium associated with a University of Gloucestershire degree.

The new Growth Hub also aims to increase the number of graduates who secure employment in Gloucestershire by 10%. Achieving this target would increase the proportion of the graduate premium generated by graduates from the University that is retained within the county and increase the impact summarised in the first column of Table 8.2.

The new Growth Hub also aims to build on the existing Degreeplus framework to increase student and graduate participation in University led employability initiatives by 15% a year. By increasing the employability skills of graduates, this should further enhance the total graduate premium generated by graduates from the University.

9 CONTRIBUTION TO THE LOCAL ECONOMY

This chapter considers the scale of the local benefits that the University of Gloucestershire generates for Cheltenham and Gloucester.

9.1 Core Economic Activity

With a turnover of £70.9 million and almost 1,600 members of staff the University of Gloucestershire is a substantial business in its own right, even before the wider economic impacts of its activity are considered.

In 2013 two local newspapers, the Gloucester Citizen and Gloucestershire Echo, published a supplement about “Gloucestershire’s Greatest Employers”. The supplement identified the top 50 firms in the County and ranked them in terms of total local employment. The University of Gloucestershire did not appear in this list but (as Figure 9-1 demonstrated) if it had, it would have been ranked as the 6th largest employer in the county.

This section considers the economic contribution that the University makes to the County as a result of its core operations.

Figure 9-1 - Gloucestershire’s top 50 employers

Employer	Employees
Gloucestershire Hospitals NHS Foundation Trust	7,500
GCHQ Cheltenham, Government communications	5,514
Gloucestershire County Council	3,320
GE Aviation	1,900
Renishaw Plc	1,800
University of Gloucestershire	1,597
Messier-Bugatti-Dowty	1,200
Spirax-Sarco Engineering Plc	1,000
Kohler Mira Ltd.	888
Endsleigh Insurance Services Ltd.	700
Stagecoach West Ltd.	653

Source: Gloucester Citizen, 2nd October 2013

9.1.1 University Expenditure

In 2013/14 the University of Gloucestershire spent £2.9 million on goods and services from businesses in Gloucester and a further £1.6 million from businesses in Cheltenham. These purchases spanned a wide range of goods and services ranging from catering and maintenance to professional fees and security.

Analysis of procurement records shows that the University’s supply chain includes 96 businesses in Cheltenham and 70 in Gloucester.

9.1.2 Expenditure of Staff, Students and Visitors

Almost 600 of the University of Gloucestershire’s 1,597 staff live in Cheltenham and 264 live in Gloucester. Most of the rest commute daily into Cheltenham and Gloucester from

elsewhere in the region. Regardless of where they live, all of these staff will spend money in local businesses, which will help to support further employment in the local economy.

It was estimated that in 2013/14, University of Gloucestershire staff spent a total of £5.0 million in Gloucester and a further £8.3 million in Cheltenham.

In 2013/14, 3,828 University of Gloucestershire students lived in Cheltenham and 937 lived in Gloucester. A further 755 students lived elsewhere in the south-west and travel regularly to one of the two campuses to attend classes.

It was estimated that in 2013/14, University of Gloucestershire students spent a total of £39.2 million in Cheltenham and £7.7 million in Gloucester.

Each year the students and staff studying and working at the University of Gloucestershire are visited by friends and family from elsewhere in the UK and around the world. As these visitors would otherwise not have a reason to visit the local area, the money they spend during their visit is additional to the local economy.

In 2013/14, it was estimated that people visiting students and staff spent £0.8 million in businesses in Cheltenham and £0.2 million in businesses in Gloucester.

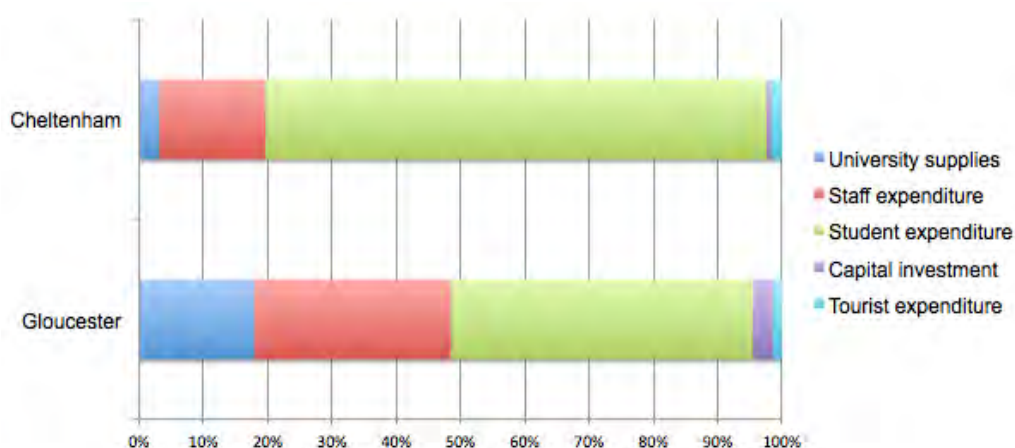
9.1.3 Capital Expenditure

Between 2009 and 2014 the University of Gloucestershire invested an average of £4.9 million per year in its two campuses in Cheltenham and Gloucester. Of this, £0.4 million/year was secured by companies based in Cheltenham and £0.5 million/year was secured by companies based in Gloucester. This expenditure has helped to support employment in the local construction sector at a time when market conditions have been particularly challenging.

9.1.4 Total Local University Related Expenditure

Taken together the four types of expenditure considered in this section amount to £66.6 million. This includes £50.3 that was spent in businesses in Cheltenham and £16.3 that was spent in businesses in Gloucester. A break-down of this expenditure is provided in figure 9.2.

Figure 9-2 - Local business expenditure supported in 2013/14



Source: BiGGAR Economics analysis of information provided by the UoG

9.2 Supporting local businesses

In addition to its core operations, the University of Gloucestershire also contributes to the local economy by supporting other businesses in the county to innovate and grow. The various ways in which it achieves this were described in chapter 7.

One local business that has been supported by the University of Gloucestershire is the Stroud based company Snow Business. A case study of the support provided to Snow Business is provided in Figure 9-3

Figure 9-3 – Snow Business consultancy support

The University is undertaking a consultancy project with Snow Business, a company involved in creating artificial snow for the movie, television and entertainment industries for 30 years. The project is being supported through the Innovation Voucher Scheme, which is designed to support small to medium sized businesses to work with universities in order to stimulate and promote innovation.

Collaboration between Snow Business and the University's School of Computing & Technology is intended to make further advances in the company's falling snow equipment. The University's consultancy support has the potential to push forward technological developments and thereby provide Snow Business with a competitive edge, which in turn can lead to business growth and additional turnover being generated.

As with any investment decision, businesses will only undertake consultancy projects if they expect the result of the project to enable them to generate additional turnover that is at least equal to the cost of the consultancy. This necessitates that the total income the University receives from consultancy is at least equal to the additional turnover that the outputs of the consultancy will generate for client businesses.

Source: BIGGAR Economics based on information provided by the UoG

Other existing business support services provided by the University also have a strong profile locally. The Student Media Project (SMP) described in Figure 7-1 for example already lists several local companies amongst its clients, these include:

- Endsleigh Insurance in Cheltenham;
- Southwest snooker Academy in Gloucester;
- Ecclesiastical Insurance in Gloucester;
- Gloucester County Council in Gloucester;
- Cheltenham Borough Council in Cheltenham;
- Active Gloucestershire in Cheltenham;
- Hartpury College in Gloucester; and
- 2000trees Festival in Cheltenham.

The new Growth Hub has created the opportunity to dramatically increase the benefits that this activity generates for the local economy. By providing a physical hub for business support the new Growth Hub should enable businesses in the local area to benefit more fully from the knowledge and expertise that exists within the University.

Since opening on 1st October the Growth Hub has already welcomed more than 200 businesses and is already discussing in-depth support with more than 60 of these. A detailed break-down about the location of each of these businesses is not yet available but it is reasonable to expect that a high proportion will be located in either Gloucester or Cheltenham.

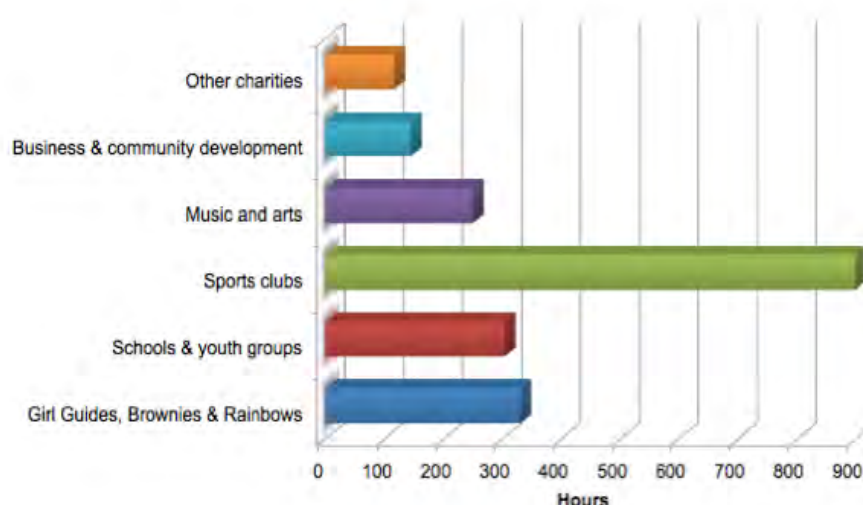
9.3 Local Community

As well as supporting local businesses, the University of Gloucestershire also makes a direct contribution to the local community as a result of voluntary work undertaken by students and staff and sponsorship of festivals, events and other community projects.

9.3.1 Volunteering

Analysis of the University's current volunteering records shows that in 2013/14 students and staff at the University spent 1,688 hours volunteering for 14 different charities and voluntary organisations in Gloucester, and 11,076 hours for 38 charities and voluntary organisations in Cheltenham. The different types of organisations that benefit from this voluntary activity are illustrated in Figure 9-4.

Figure 9-4 - Hours of voluntary activity by organisation type



Source: BiGGAR Economics analysis of information provided by the UoG

Over recent years public sector austerity measures have created an increasingly challenging funding environment for charities and third sector organisations. This means that the role of voluntary and in-kind support is now more important than ever. Without the support provided by volunteers from the University it is likely that many of the local organisations supported would have had to cut back on service delivery.

9.3.2 Festivals and Events

Every year Cheltenham hosts over twenty festivals covering everything from music and literature to food and drink, the performing arts and the world famous Gold Cup Racing Festival in March. These festivals help to create a vibrant and creative environment in the Town, making the area a more attractive place to live, work and invest.

The festivals also deliver substantial economic benefits. A review¹⁵ undertaken for Cheltenham Borough Council reported that the Cheltenham Festivals generate £5.2 million in direct income and support 129 jobs for the local economy.

Figure 9-4 illustrates that in 2013/14 staff and students at the University spent 250 hours undertaking unpaid work to support music and arts organisations and events in Cheltenham and Gloucester. In 2013/14 the University also provided £73,400 in direct

¹⁵ Cheltenham Festivals in 2011, Review for Cheltenham Borough Council

sponsorship for local festivals and cultural events. The largest beneficiary was Cheltenham Festivals, which received a contribution of £30,000. Other beneficiaries included:

- **Cheltenham Design Festival** – an annual design festival featuring talks and networking. The University supported the festival by sponsoring one of the talks;
- **Cheltenham Poetry Festival** – the University also provided general sponsorship of the event and specific support for two of the events;
- **Cheltenham Fashion Week** – an annual not-for-profit fashion event designed to showcase young talent;
- **Cheltenham Art Gallery and Museum** – the University provided general sponsorship designed to enhance the profile of the local museum and art gallery;
- **BBC Introducing** – In 2014 the University hosted this annual BBC event, which provides the BBC's platform for undiscovered and unsigned music;
- **Enterprise Awards** – an annual awards ceremony designed to recognise excellence in business engagement; and
- **2000 Trees** – the University hosted a media marquee for this annual grass roots music festival.

The review referred to above highlighted the important role that sponsorship plays in sustaining the Cheltenham Festivals. The University's support for this activity therefore directly supports the continued success of the festivals and the on-going contribution that they make to the local economy.

10 SUMMARY OF QUANTIFIABLE IMPACTS

This section summarises the impacts considered in this report and quantifies the impact that the University of Gloucestershire generates.

10.1 Quantitative Impacts

The total quantitative impact of the University of Gloucestershire is given below. This shows that the University supports:

- £151.2 million GVA and 2,163 jobs in Gloucestershire; and
- £208.5 million GVA and 2,826 jobs in the South West; and
- £356.5 million GVA and 3,729 jobs in the UK.

These impacts are summarised in Table 10.1 and Table 10.2.

Table 10.1 – Total Impact of the University of Gloucestershire - GVA (£m)

	Gloucestershire	South West	UK
Direct	47.7	47.7	47.7
Supplier	4.4	8.8	18.4
Staff Spending	5.6	10.6	19.6
Capital Spending	0.5	1.1	4.1
Visiting Friends and relatives	0.5	0.8	1.1
Total Core Impact	58.7	69.0	90.9
Student Spending	22.7	33.5	40.8
Student Employment	9.3	11.6	13.9
Student Volunteering	0.1	0.1	0.1
Total Student Impact	32.1	45.2	54.8
Collaborative and Contract Research	1.6	1.6	4.1
Consultancy	0.4	0.8	1.1
Start Up Companies	0.6	1.1	1.5
CPD	0.1	0.1	0.1
Student Placements	2.4	4.4	6.0
KTPs	1.7	3.1	4.1
Total Knowledge Transfer Impact	6.9	11.2	16.9
Total Impact (ex graduate premium)	97.8	125.4	162.6
Graduate Premium	53.5	83.1	193.9
TOTAL IMPACT	151.2	208.5	356.5

Source: BiGGAR Economics

Table 10.2 – Total Impact of the University of Gloucestershire - Jobs

	Gloucestershire	South West	UK
Direct	831	831	831
Supplier	121	239	502
Staff Spending	133	261	488
Capital Spending	8	20	70
Visiting Friends and relatives	17	26	33
Total Core Impact	1,110	1,377	1,925
Student Spending	518	761	925
Student Employment	435	519	616
Student Volunteering	5	6	7
Total Student Impact	958	1,286	1,548
Collaborative and Contract Research	27	27	69
Consultancy	7	13	18
Start Up Companies	10	19	25
CPD	6	11	15
Student Placements	40	73	99
KTPs	4	21	31
Total Knowledge Transfer Impact	94	164	257
TOTAL IMPACT	2,163	2,826	3,729

Source: BiGGAR Economics

10.2 Value for Money

In 2013/14 the University of Gloucestershire directly contributed £47.7 million GVA to the UK economy. The total GVA in the UK attributable to the University is £356.5 million, which implies that every £1 of direct impact generates £7.47 for the UK economy.

The total income of the University of Gloucestershire in 2013/14 was £70.9 million and there were 831 ftes directly employed. This implies that every £1 of income to the University generated £5.03 GVA in the UK economy and every job direct job supported a total of 4.5 jobs in the wider economy.

11 WIDER IMPACTS

This chapter summarises some of the wider benefits generated by the University of Gloucestershire that cannot be fully quantified.

11.1 Sustainability

Environmental sustainability is becoming increasingly relevant to higher education, with more and more universities considering the current and future impact of their activities as well as their responsibilities toward the communities they operate in.

The University of Gloucestershire has a long-term, institutional commitment to sustainability and works to embed sustainability across courses, plans and activities. It does this by:

- leading innovative interdisciplinary and socially relevant research on sustainability;
- implementing sustainability measures across all campuses in order to minimise the environmental impact of the University;
- providing opportunities for students and staff to become involved in hands-on projects; and
- working in partnership with a range of organisations, locally, nationally and internationally to foster sustainability activity.

The University of Gloucestershire's commitment to environmental sustainability is demonstrated by the fact that the University has consistently been ranked in the top five in the People and Planet Green League since the league began. This was recognised in 2014 when the University received a special award as the only university to have consistently ranked in the top five since the league began in 2007. The University has also been the most short-listed university in the Green Gown Awards since they began in 2004 being highly commended in 2013 and a finalist in 2012.

11.1.1 Sustainability Research

While many leading universities in the UK are involved in developing scientific and technology based responses to the challenges of climate change the University of Gloucestershire is the only university in the UK that is known for its expertise and contribution to people's responses to this challenge. This is significant because although science and technology can define problems and identify solutions, ultimate changes towards sustainability are dependant on people's decisions, choices and actions.

The University's specialist areas of health, education, leadership, management, psychology, community development, local engagement, consumer studies, marketing, communication, art and media studies are relevant to the study of how to inform and engage people in change. Several research institutes and centres at the University have sustainability as a focus, details of these are provided below.

The Countryside and Community Research Institute – is engaged in research consultancy and policy work on agri-environment schemes, rural economic development, sustainable land use management, organic markets, rural services and communities and historic sites and landscapes. It directs and collaborates on a variety of projects for agencies such as DEFRA, ESRC, the Welsh Assembly Government and the Irish Heritage Council.

The International Research Institute in Sustainability (IRIS) – established in October 2008 to provide new cutting edge research programmes and to strengthen existing research expertise in sustainability within the University. IRIS brings together researchers of

international excellence in the area of sustainability and undertakes work for international agencies such as UNESCO Culture, DESD, Asia-Pacific, IUCN, UNECE and EU.

IRIS also convenes a postgraduate sustainability research network, which includes members from other UK and international universities. IRIS has expertise over a number of areas – leadership, governance and organisational change, professional practice and education for sustainable development, health and wellbeing and the measurement of progress towards sustainable development.

The University also leads a Regional Centre of Expertise in sustainability education. The Centre is endorsed by the United Nations University and is based in Cheltenham at the University of Gloucestershire, the RCE has been set up to assist the Severn area in moving towards sustainable development through a process of learning, participatory engagement and partnership building. The centre is endorsed by the United Nations University and is one of 116 similar centres throughout the world seeking to support the Green Economy through education, capacity building and networking. It brings together 110 businesses, NGOs and education institutions from across the West Midlands and South West areas.

11.1.2 Environmental Achievements

As well as leading research into sustainability the University has taken a lead in making sustainability a practical priority. As part of this, sustainability is incorporated in all key policy documents including the university's strategic plan. The University also has a sustainable procurement strategy in place, and practical initiatives such as introducing rainwater tanks, investing in solar energy and a bicycle loan scheme amongst others.

Evidence of the contribution that the University has made toward environmental sustainability includes the fact that the University has:

- run on renewable electricity since 1993 - it was Ecotricity's first client and one of the pioneers in 'green tariff' procurement;
- reduced CO2 emissions from on-site energy and fuel use by 30% since 2005 and is on track to meet its HEFCE agreed target of a 40% reduction by 2020; and
- reduced water consumption by 20% since 2010 and is installing low flow appliances in new buildings and refurbishments.

11.1.3 Student Sustainability Initiatives

The University of Gloucestershire actively encourages students and staff to become involved in initiatives designed to promote environmental sustainability. For example in 2013 students at the University donated 352 bags of clothes, books and other items to the British Heart Foundation during an end of term clear out, raising over £7,000 for research into the fight against heart disease and reducing waste. The 2013 travel survey also showed that 78% of students travel to university and 80% travel between campuses sustainably (i.e. on foot, bicycle, bus, train or car-sharing.)

To further encourage environmental initiatives, the University's Students' Union was for awarded nearly £300,000 from the NUS Students' Green Fund to deliver sustainability opportunities and projects to students and the local community. The Union are using this funding to deliver five main types of project:

- **Social Enterprise** – the funding has been used to support the creation and development of a number of social enterprise companies including the Cheltenham Chilli Company, Core Blimey Juice and Cider, and Oh Beehive;

- **Green Impact** - offering opportunities for local businesses to work with with trained student auditors to improve their sustainability;
- **Global Athletes** – a programme designed to improve the environmental credentials of University sports teams by helping them to source sustainably produced local food and sports kit and encouraging them to implement initiatives such as banning single use water bottles at training;
- **Green Placements** – providing opportunities for students and pre-university students to undertake environmentally themed summer placements and gap-years;
- **Little Green Shops** - providing information on student opportunities, selling products produced through other parts of the project and relevant green businesses.

11.2 Partnership Working with Further Education Providers

As well as taking an active role in economic development and governance of Gloucestershire, the University has also developed formal strategic partnerships with several local higher education colleges. These partnerships are intended to extend the reach of higher education in the City through the provision of foundation degrees. These programmes give students the opportunity to study at higher education level within a local further education college for a year with the option of undertaking further study at the University of Gloucestershire in future years.

By working in partnership with local colleges the University of Gloucestershire is therefore directly helping to increase local levels of participation in higher education. Recent research¹⁶ that considered the role of universities in boosting regional economic growth in the UK demonstrated that there is a clear link between participation in higher education and regional economic growth. By participating in these partnerships the University is therefore directly contributing to the economic growth of Gloucestershire.

¹⁶ Million + (March 2014), smarter regions, smarter Britain: boosting regional growth through universities.

12 ECONOMIC RATIOS AND MULTIPLIERS

Table 12.1 – Economic ratios and multipliers

Sector	Turnover/ Employee	GVA/ Employee	Turnover /GVA	Employment Multiplier (Type 2)	GVA Multiplier (Type 2)
Accommodation and food services	£38,912	£19,582	1.99	1.30	1.64
Accounting, bookkeeping and auditing activities; tax consultancy	£72,430	£57,003	1.27	1.75	1.48
Activities of other membership organisations	£28,073	£6,354	4.42	1.36	1.82
Advertising and Market Research	£162,717	£71,874	2.26	1.75	1.48
Agriculture, forestry and fishing	£78,391	£30,891	2.54	1.53	1.97
Artistic Creation	£105,690	£65,414	1.62	1.46	1.59
Arts, entertainment and recreation	£177,220	£25,924	6.84	1.35	1.68
Computer programming, consultancy and related activities	£138,677	£80,335	1.73	2.19	1.78
Construction	£146,676	£56,090	2.61	2.08	2.11
Education	£29,311	£12,529	2.34	1.41	1.49
Electricity, gas, steam and air conditioning supply	£887,099	£191,818	4.62	4.22	2.23
Engineering activities and related technical consultancy	£128,065	£70,492	1.82	1.79	1.99
Event Catering and other food service activities	£36,669	£18,206	2.01	1.29	1.62
Extraction of crude petroleum and natural gas	£2,500,267	£1,301,733	1.92	2.41	1.94
Financial and Insurance Services	£832,851	£476,471	1.75	2.22	1.53
Human Health Activities	£46,698	£26,384	1.77	1.49	1.66
Legal activities	£90,158	£66,076	1.36	1.75	1.48

Managament consultancy service	£119,329	£78,851	1.51	1.40	1.52
Manufacture of basic pharmaceutical products and pharmaceutical preparations	£324,280	£148,520	2.18	2.29	1.30
Manufacture of beer	£442,529	£87,412	5.06	1.76	1.46
Manufacture of computer, electronic and optical products	£145,031	£62,547	2.32	1.95	1.91
Manufacture of electrical equipment	£167,616	£57,698	2.91	1.95	1.91
Manufacture of furniture	£75,209	£29,535	2.55	1.48	2.18
Manufacture of medical and dental instruments and supplies	£102,714	£49,119	2.09	2.36	1.95
Manufacture of motor vehicles, trailers and semi-trailers	£407,637	£77,326	5.27	2.36	1.95
Motion picture, video and television programme production, sound recording and music publishing activities	£143,846	£39,949	3.60	1.46	1.59
Office administrative, office support and other business support activities	£131,139	£64,230	2.04	1.75	1.48
Other professional, scientific and technical activities	£88,588	£48,773	1.82	1.75	1.48
Passanger rail transport, interurban	£126,157	£48,078	2.62	2.79	2.76
Printing and service activities related to printing	£94,810	£42,009	2.26	1.46	1.59
Professional, Scientific and Technical services	£106,047	£61,175	1.73	1.75	1.48
Publishing activities	£118,620	£67,361	1.76	1.46	1.59
Renting and operating of own or leased real estate	£120,678	£77,186	1.56	1.66	1.35
Retail sale in non-specialised stores with food, beverages and tobacco predominating	£132,285	£21,314	6.21	1.36	1.52
Retail sale of bread, cakes, flour confectionary and sugar confectionary in specialised stores	£39,345	£17,782	2.21	1.36	1.52

Retail trade, except of motor vehicles and motorcycles	£113,929	£23,921	4.76	1.36	1.52
Scientific Research and Development	£149,664	£46,955	3.19	1.36	1.52
Security and investigation activities	£37,919	£27,187	1.39	1.79	1.99
Services to buildings and landscape activities	£34,105	£18,443	1.85	1.89	1.77
Social work activities without accommodation	£19,685	£9,787	2.01	1.49	1.66
Sustainable Tourism	£73,706	£21,177	3.48	1.30	1.64
Telecommunications	£312,517	£129,074	2.42	2.20	1.67
Water supply, sewerage, waste management and remediation activities	£194,652	£102,379	1.90	1.92	1.83
Whole economy	£154,732	£43,719	3.54	1.98	1.83
Wholesale and retail trade and repair of motor vehicles and motorcycles	£275,433	£43,280	6.36	2.04	1.86
Wholesale trade, except of motor vehicles and motorcycles	£771,291	£47,709	16.17	2.04	1.86
Accommodation and food services	£38,912	£19,582	1.99	1.30	1.64

Source: Scottish Government input-output tables for 2011 (2014)