

# Economic Impact Assessment

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Commissioned by [Mickledore Ltd](#)  
May 2023



**ScienceCreates**



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# Executive Summary & Comparators

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# Executive Summary & Comparators

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## Members

With the support of Science Creates, their members add **at least £82.3m per annum to the UK economy and at least £30.6m to the West of England** economy in terms of GVA.

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## Sector

The membership of 41 businesses is aligned with UK economic strategy with 17 businesses **or 63% of business identifying as being in the bio-tech, diagnostic or medical device sector.**

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## Employment

Members of Science Creates employ at least **370 high value jobs** as well as 23 Non-Exec Directors and a number of intern posts.

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## Salary

The average salary of employees is circa £50,000 per annum providing **46% higher salaries than the average for Bristol**<sup>1</sup>

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## Education

The educational attainment of employees at Science Creates is **87% with a minimum of a degree qualification** compared to 63% across Bristol with NVQ4+.

# Executive Summary & Comparators

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## Funding

Science Creates members have raised £129m in business funding over their lifetime with a further anticipated **£200m+ in equity finance in the next 12 months.**

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## R&D

On average Science Creates members commit **61% of expenditure directly to R&D.** The UK commits 1.74% of GDP to R&D as an economy.

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## Collaborations

**56% of Science Creates members undertake overseas collaborations.** In 2020 just 10.7% of UK companies successfully exported good and services.

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## Contributions

**Circa £10m in Treasury contributions per annum** are estimated to be generated through the work of Science Creates.

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## Growth

Growth is anticipated from the majority of businesses. **70.4% of business are confident of growth in the next 12 months** and 59% of businesses firmly attribute some of their success to Science Creates.

# Introduction

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# The Project

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**Science Creates** is a deep tech ecosystem, supported and backed by successful entrepreneurs, that enables scientists and engineers to accelerate their ideas and build disruptive businesses from scientific discoveries. Our start-ups are solving global problems with groundbreaking advancements in healthcare, the environment and quality of life.

Founded in 2015, **Science Creates** comprises two research facilities in Bristol, a venture capital arm that offers investment into early-stage and scale-up deep tech companies; all contributing to a comprehensive network of entrepreneurs, advisors, and strategic partners; and an educational outreach charity. .

Whilst the business has a close relationship with the University of Bristol, the facilities are an increasingly important resource for the West of England science ecosystem as a whole with links to other Higher Education establishments.

The incubation offer extends significantly further than the provision of highly specified research and development real estate. **Science Creates** provides mentoring, expertise and the resources needed for scientific innovation as well as business development. SCVC has also been set up to assist members with securing funding for early stage deep tech companies.

This report will assess in detail the economic impact generated by **Science Creates** and its members to the West of England.

# Mickledore

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**Mickledore** is a specialist economics advisory business which was established in 2008 from the regional development activity of EY (then Ernst & Young). The business is based in Warrington, North West England although projects are carried out across the UK – and the business has a long history of working for Bath & NE Somerset Council and the University of Bath as well as Invest Bristol and Bath.

**Mickledore** have completed a number of engagements at the interface of research & development and regional economies and this work has included developing economic assessments and / or business cases for the Universities of Northumbria, Newcastle, Liverpool, Liverpool John Moores, Manchester Metropolitan, Chester, Bath and Greenwich.

**Mickledore's** work has included examining the impact of and / or raising funds for incubators including the National Innovation Centre for Ageing (Newcastle), Merseybio Incubator (Liverpool) and an assessment of Harwell Science Park amongst others.

Nigel Wilcock, Director, is also the Executive Director of the Institute of Economic Development and holds a position on the Governing Body of the University of Salford.

# Methodology

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# Methodology

## Desktop Data

Mickledore collected data during this phase at several levels:

- West of England economy and sector strengths**
- Science Creates members data**

This data was then fed into a **quantitative and qualitative assessment**.

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## Geography

The area of evaluation considered for this assessment is for both the UK and the West of England. This covers the **Bristol, South Gloucestershire, North Somerset, and Bath and North East Somerset areas**.

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## Members Involvement

An important aspect of this economic evaluation **involved input from the members of Science Creates**. Due to the strong member engagement with Science Creates this provided a good opportunity to secure primary data.

Members were asked to respond to a survey, **which helped ascertain GVA, leakage, deadweight and future prospects**. The survey was also used to capture qualitative data from the members.



# Survey Methodology

## Stage 1

The survey was sent by email to members of the ecosystem by the Science Creates team.

## Stage 2

To preserve the openness and confidentiality of the responses, the members sent their completed survey back to Mickledore, to prevent this being shared with Science Creates.

## Stage 3

The survey period ran from 03<sup>rd</sup> April to 28th April 2023.

## Stage 4

The survey was sent to 34 members (of 41) and the achieved sample was 27, achieving a response rate of 79.4% (or 65.9% of members). This is considered an excellent response rate, and evidences the members engagement with Science Creates.

## Analysis

The core work at the analysis stage consisted in taking primary data, which indicated the gross impacts of the incubators, and adjusting the outputs to net measures after considering the deadweight, leakage, displacement / substitution and multiplier effect. This led to the calculation of a Benefit/Cost Ratio of Science Creates.

## Differentiators & Qualitative Factors

As part of the evaluation of deadweight, it was necessary to understand the competing offers in the West of England. This work can be used to set out the points of differentiation for the Science Creates incubators and also informs the qualitative benefits of the provision for the region.

# West of England

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Key Economic Figures



# Population

The West of England geography of evaluation has a population of 1,173,024 residents, 610,600 of these are economically active.

This table highlights the fact that, although Bristol has a higher percentage of people employed as Science, Research, Engineering and Technology Professionals than the West of England, it is underperforming when considering the Science, Engineering and Technology Associate Professionals , which suggests that there may be a lack of technicians and support staff in the area.

Occupations	Bristol		West of England		Great Britain	
	number	%	number	%	number	%
Corporate Managers and Directors	15,000	4.7%	36,300	6.0%	2,239,100	7.1%
Other Managers and Proprietors	14,100	4.4%	24,200	4.0%	1,061,600	3.4%
Science, Research, Engineering and Technology Professionals	39,900	12.5%	66,800	11.0%	2,574,500	8.1%
Health Professionals	14,700	4.6%	27,500	4.5%	1,541,000	4.9%
Business, Media and Public Service Professionals	37,500	11.7%	64,700	10.6%	2,597,100	8.2%
Science, Engineering and Technology Associate Professionals	6,100	1.9%	14,100	2.3%	630,700	2.0%
Health and Social Care Associate Professionals	10,500	3.3%	19,500	3.2%	800,100	2.5%
Business and Public Service Associate Professionals	18,800	5.9%	39,200	6.4%	2,244,000	7.1%

# Industry Sectors

When reviewing the industry sectors in Bristol, two sectors stand out compared to both the regional and national landscape. These are namely Professional, scientific and Technical and Health. The graph to the left highlights the specialisations related to these industry sectors.

Chart to the left displays  
Employment by Broad Industrial Groups - 2021

Industry	Bristol		West of England		Great Britain	
	number	%	number	%	number	%
1 : Agriculture, forestry & fishing (A)	30	0.0%	1,375	0.2%	220,000	0.7%
2 : Mining, quarrying & utilities (B,D and E)	4,000	1.2%	9,500	1.5%	395,000	1.3%
3 : Manufacturing (C)	12,000	3.7%	37,000	5.9%	2,295,000	7.6%
4 : Construction (F)	13,000	4.0%	28,500	4.5%	1,478,000	4.9%
5 : Motor trades (Part G)	6,000	1.9%	11,750	1.9%	513,000	1.7%
6 : Wholesale (Part G)	10,000	3.1%	17,500	2.8%	1,066,000	3.5%
7 : Retail (Part G)	23,000	7.1%	50,000	7.9%	2,784,000	9.2%
8 : Transport & storage (inc postal) (H)	13,000	4.0%	36,000	5.7%	1,531,000	5.0%
9 : Accommodation & food services (I)	22,000	6.8%	47,000	7.4%	2,279,000	7.5%
10 : Information & communication (J)	17,000	5.3%	31,500	5.0%	1,348,000	4.4%
11 : Financial & insurance (K)	16,000	5.0%	23,300	3.7%	1,079,000	3.6%
12 : Property (L)	4,000	1.2%	8,500	1.3%	545,000	1.8%
13 : Professional, scientific & technical (M)	41,000	12.7%	65,000	10.3%	2,694,000	8.9%
14 : Business administration & support services (N)	31,000	9.6%	56,000	8.9%	2,690,000	8.9%
15 : Public administration & defence (O)	16,000	5.0%	40,000	6.3%	1,399,000	4.6%
16 : Education (P)	30,000	9.3%	58,000	9.2%	2,649,000	8.7%
17 : Health (Q)	54,000	16.8%	91,000	14.4%	4,131,000	13.6%
18 : Arts, entertainment, recreation & other services (R,S,T and U)	10,000	3.1%	20,000	3.2%	1,285,000	4.2%

# Location Quotients

Location quotients (LQ) are a way of discovering the industries that are truly specialised in a regional economy.

The 2 digit SIC codes analysis below highlights a clear specialism in Bristol in Human Health activities compared to the West of England area and Great Britain. It is interesting to note that although the scientific research and development and other professional, scientific and technical activities are clearly areas of expertise, they are still relatively small in terms of employment.

This is likely explained by the fact that once the R&D has matured to a tradeable product or service, the employment derived from this is probably captured under different SIC codes, for example a related healthcare manufacturing activity or human health activities.

<b>Employment and location quotients (LQ)- Selection of 2 digit SIC codes</b>	<b>Bristol- number of employees</b>	<b>LQ vs West of England</b>	<b>LQ vs Great Britain</b>
70 : Activities of head offices; management consultancy activities	7,000	1.12	0.81
71 : Architectural and engineering activities; technical testing and analysis	7,000	0.90	1.26
72 : Scientific research and development	2,000	1.15	1.20
74 : Other professional, scientific and technical activities	3,000	1.03	1.42
82 : Office administrative, office support and other business support activities	6,000	1.07	1.07

# Science Creates



# The Science Creates Group

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Science Creates is the brand name that represents our ecosystem. There are several legal entities which deliver different products and services to their stakeholders. There are currently four Science Creates companies:

## Science Creates Incubators

The property company, which holds head leases of existing infrastructure.

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## Science Creates Services

The operator company operates the 2 existing incubators- 45,000 sq ft.

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## SCVC

VC firm with £50M under management across 2 funds.

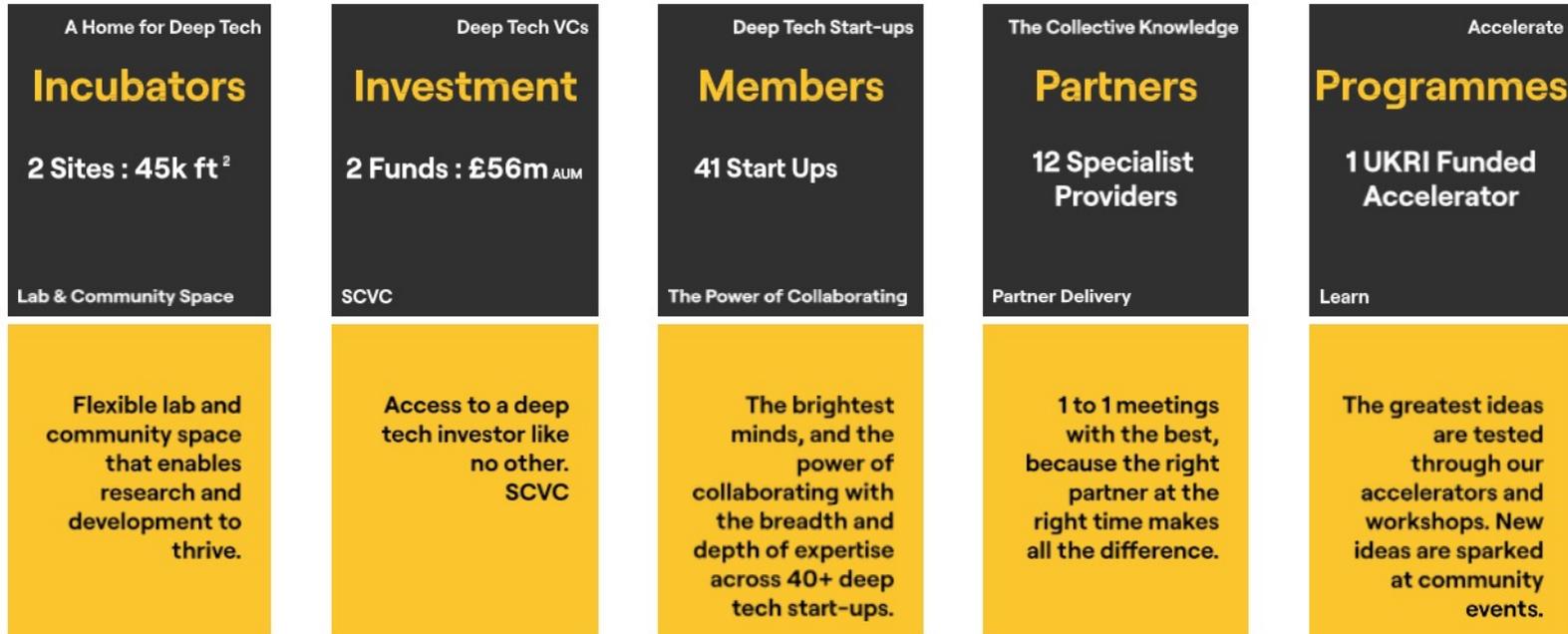
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## Science Creates Outreach

Charity delivering STEM outreach activities in the "Learning Lab".

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# The Science Creates Ecosystem



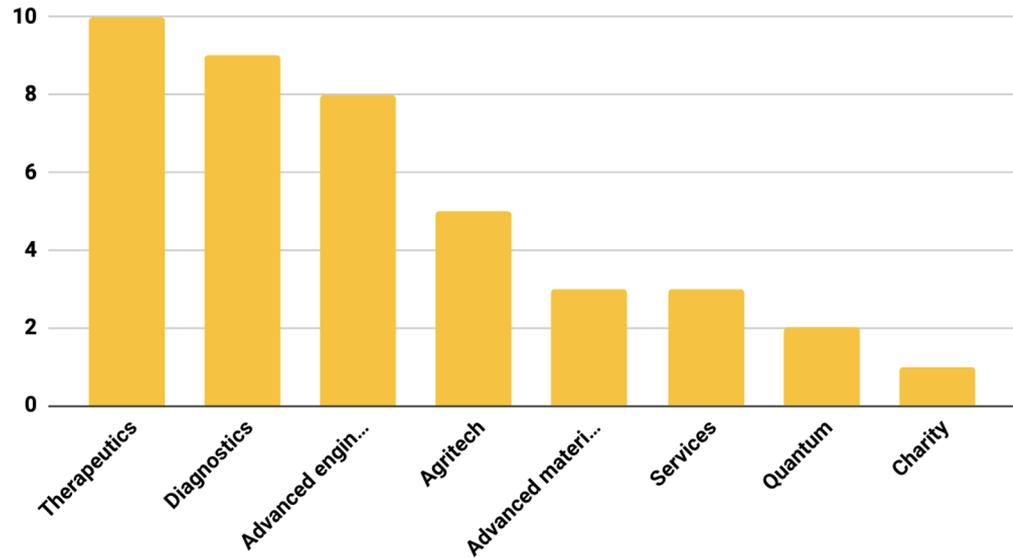
# Sectoral Analysis of Members

**The incubators count 41 members** as of April 2023. The respondents to the survey (27 members) employ a total of 370 Full Time Equivalent (FTE) employees.

When analysing the sectoral spread of the tenants, **there is a clear majority involved in the life sciences sector (46%)**. The businesses in this sector are involved in therapeutics (biotechnology) and diagnostics. Advanced Engineering, advanced materials and Agritech are also well represented within the incubators. It is worth noting the emergence of quantum companies as well.

Looking more closely into some of the activities of the members, there is a strong alignment with the UK government priorities, specifically with the Rapid Technology Assessments published by the Office for Science in 2023. **These include technologies such as artificial intelligence, synthetic genomics and novel battery technologies.**

### Members Sectoral Distribution



# Survey Analysis



# Quantitative Analysis

## Survey

In determining the impact of Science Creates, a survey was undertaken across the membership of the organisation. Of the 41 members a response was received from 27 businesses (66% response rate) and the respondents were responsible for 370 employees. The findings of the survey are set out below.

## Membership, Duration and Company Sector

Of the companies responding to the survey, the type of membership held varies as shown below (2 companies did not characterise their membership type):

Graph 1: Membership Type

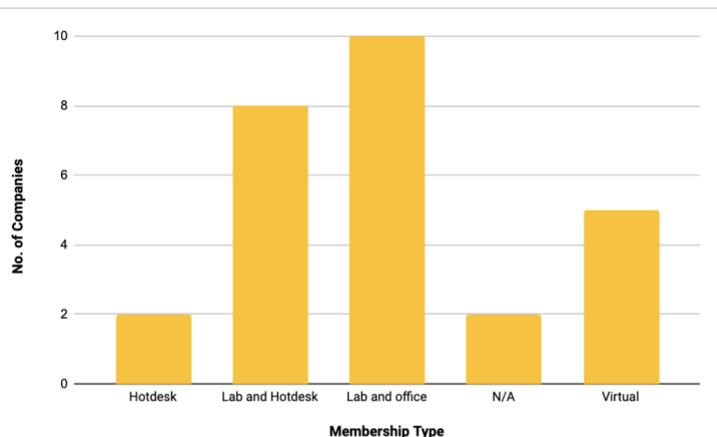


Table 1: Membership Length

Membership length	<1 year	1-2 year	2-3 years	3-4 years	4+ years
No. of companies	6	6	4	2	8

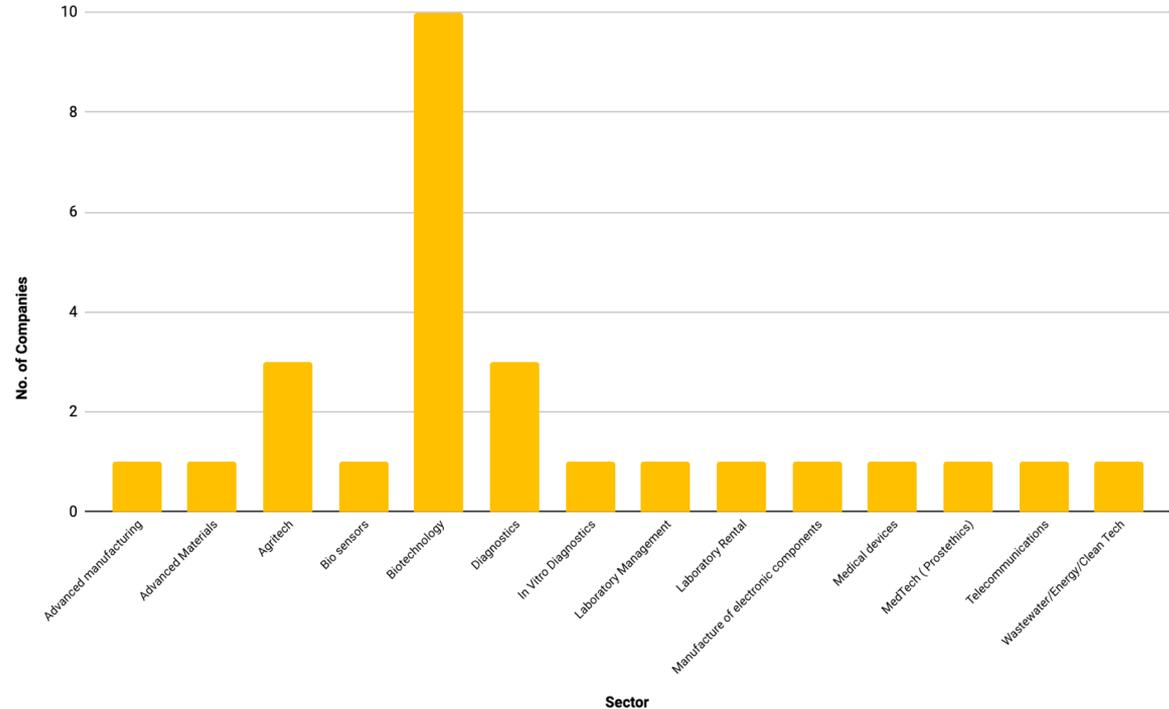
# Quantitative Analysis

## Summary of Membership Duration

The largest number of companies have been members of Science Creates for 4+ years (although this category covered more than one year). Those companies who have retained membership for 2-3 years and 3-4 years would have originally signed up during the period when Covid-19 was creating restrictions in working practices.

## Membership by Sector (as classified by Members)

The sector activity of the businesses as described by the businesses themselves (compared to sector analysis undertaken by Science Creates) is shown in the graph to the right.



Graph 2: Membership by sector (as self-classified by members)

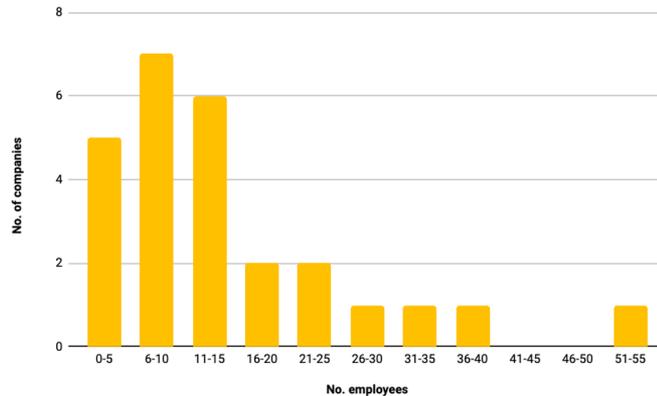
# Quantitative Analysis

## Employment & Turnover Characteristics

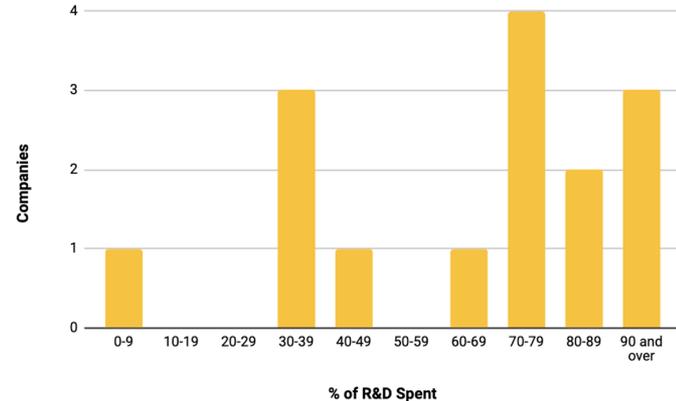
The numbers employed by individual companies across Science Creates members is between 1 person and 52 employees. The majority of businesses (67%) employ between 1-15 staff. Despite Science Creates being focused on start-up activity, only 44% of the membership are classified as micro businesses (<10 employees) compared to 89% in the UK as a whole. In the Scientific research and development sector 80.6% of businesses are micro.

The characteristics of the membership as start-up ventures is better evidenced by the reported turnover. Of the respondents to the survey, 56% reported that they were 'pre-revenue' in nature. Only 2 businesses reported a turnover in excess of £2m

Graph 3: Distribution of Business by Employee Number



Graph 4: Distribution of Business by Annual Revenue

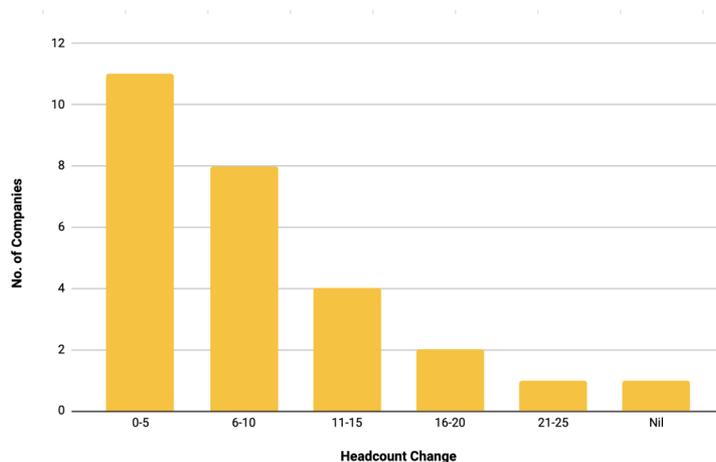


# Quantitative Analysis

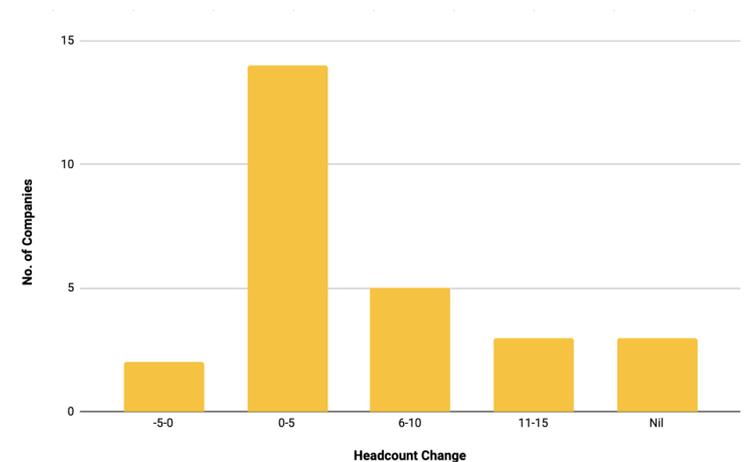
In total, the membership of Science Creates employs 370 FTE and the survey respondents employed 299 of these people. Almost all of the respondents increased their headcount whilst they have been members of Science Creates. Most of these increases have involved adding up to 5 new staff members but in the case of 1 member, the increase has exceeded 20 people whilst they have been at Science Creates. In England technical and research employment has risen by 2.4 jobs per annum.

The majority of the respondents increased their headcount over the last 12 months. Of the 27 respondents, 20 businesses (74%) increased their headcount and only two recorded a declining number.

Graph 5: Headcount change whilst at Science Creates



Graph 6: Headcount change in the last 12 months

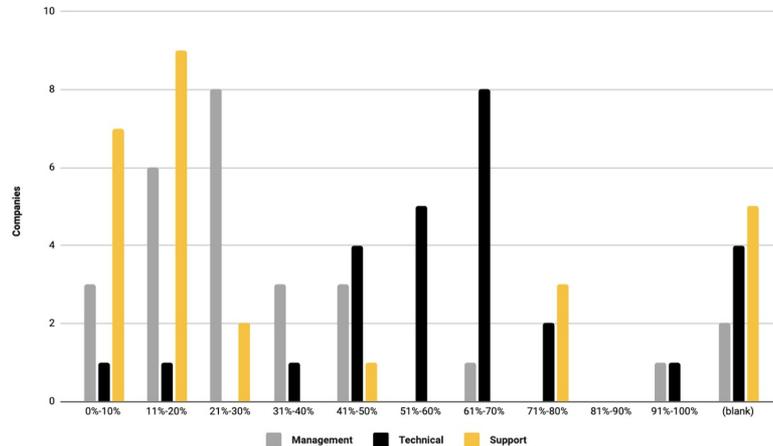


# Quantitative Analysis

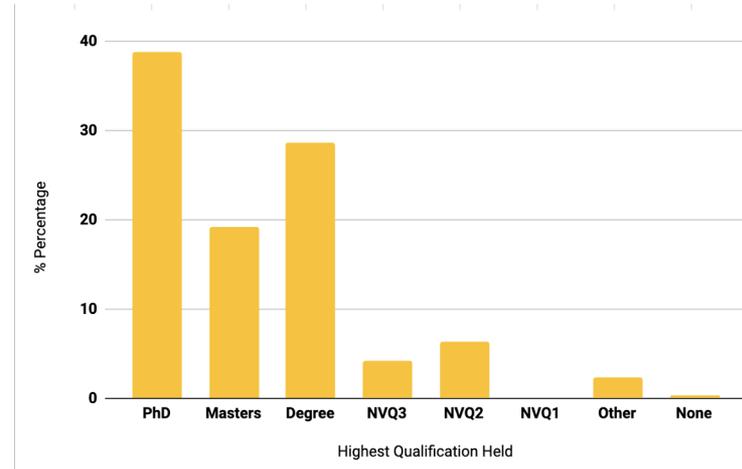
The survey explored the split of staff between management, technical and support activities. The distribution reported by the respondents is shown by decile in the graph below but in summary this illustrates that for the majority of companies support staff made up 20% or less of the workforce (59% of companies reported this); the majority of companies reported that management made up 11-30% of the workforce (52%) and technical staff made up between 41% and 70% of the workforce of companies in 63% of companies.

The distribution of staff roles is also reflected in the distribution of workforce qualifications. Science Creates members employ 129 PhD qualified staff, and these staff make up 39% of the workforce where qualifications were reported (and at least 35% of the total workforce across all members). When staff with the minimum of a degree level qualification are considered this accounts for 87% of the workforce employed by Science Creates members. The distribution of the qualifications held by staff is illustrated in the graph below.

Graph 7: Distribution of management, technical and support staff



Graph 8: Distribution of workforce by highest qualification achieved.



# Quantitative Analysis

The different skill levels and activities of the workforce result in wide ranging salary bands for the broad role descriptions as follows:

Table 2: Salary ranges by broad role type

<b>Job type</b>	<b>Management</b>	<b>Technical</b>	<b>Support</b>
<b>Salary range</b>	£37,000 - 200,000	£25,000 - £110,000	£10,000 - £80,000

Respondents were requested to provide numbers of staff by broad job type and the salary range for the different types. To arrive at an estimated average salary, the midpoint of each range was multiplied by the number of staff in that job type and an average calculated based on that midpoint.

The results are shown below but can be skewed by the definition that the respondent applies to different job roles. Numbers will also be skewed by wide ranges with isolated examples of individuals at the top of the range.

Table 3: Midpoint salaries

<b>Job type</b>	<b>Management</b>	<b>Technical</b>	<b>Support</b>
<b>Salary range</b>	£82,100	£40,300	£40,500

In addition to employees, 10 out of 27 (37%) respondents had appointed Non-Executive Directors (NEDs). In total Science Creates respondents provided 23 roles, with these directors generally receiving £6,000-£20,000 for their part-time contributions although there were 3 outliers to this range who received more substantial remuneration. Of the respondents, 59% made use of student internships or similar.

# Quantitative Analysis

In order to gain a sense of the recruitment patterns of the businesses and economic impact that the employment of Science Creates generates for the West of England, an analysis was undertaken of the number of staff resident in the West of England (Combined Authority area). The total proportion of membership staff living locally was 71%. The proportions were higher for the technical and support staff.

Table 4: Staff living in the West of England Combined Authority area

	<b>Management Staff</b>	<b>Technical Staff</b>	<b>Support Staff</b>	<b>All Staff</b>
Total no.	75	180	115.5	370
No. living in West of England	46	132	86	264
% living in West of England	61%	73%	74%	71%

# Quantitative Analysis

## Finance Raised & The Future

A key element of the Science Creates community is the need to raise finance to continue the work of the businesses especially where those businesses are pre-revenue.

Of the survey respondents, only 3 businesses had not raised finance whilst at Science Creates and were not in the process of raising finance. Almost three quarters (74%) of businesses had successfully raised finance at Science Creates.

In terms of funding the respondents had raised £95.3m whilst at Science Creates and those same companies had raised £129.2m overall. The funding approach was set out by respondents to the survey and the funding disclosed included:

Disclosed Funding Methods	
1- Directors Backing	4- Seed Funding
2- Corporate Connections	5- Series A Funding
3- Angel/ Pre-Seed	6- Grant

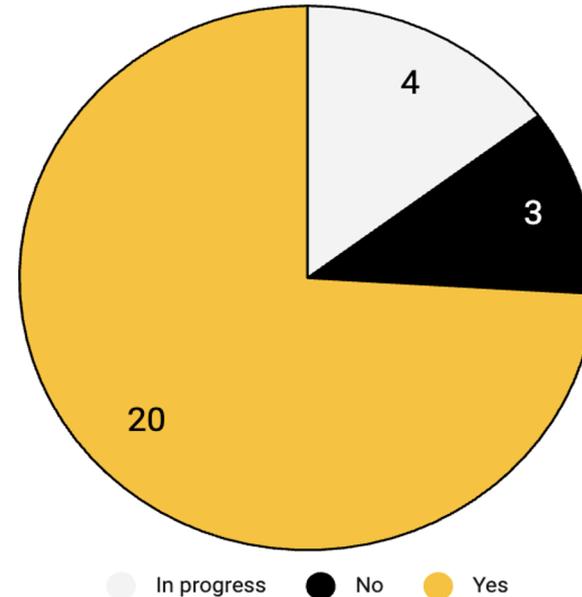
# Quantitative Analysis

## Finance Raised & The Future

Whilst the funding raised is not disclosed in a consistent manner by all members it is clear that the most common form of funding was through seed funding. In terms of grant funding, grants from UK Research & Innovation (UKRI) were relatively common but made up the minority share (or none) of the funding raised in all but one example.

In total, grant funding raised amounted to £15.9m or 12.3% of total funding, albeit this percentage is somewhat misleading given that £5.9m in grant funding was raised by a single applicant.

In terms of future funding, only 4 respondents (15%) suggested that no further funding would be raised in the next 12 months. The remaining 23 companies estimated that funding rounds in the next 12 months could raise as much as £200m , but this will rely on successful completions.



Graph 9: Companies raising finance at Science Creates

# Quantitative Analysis

## Suppliers

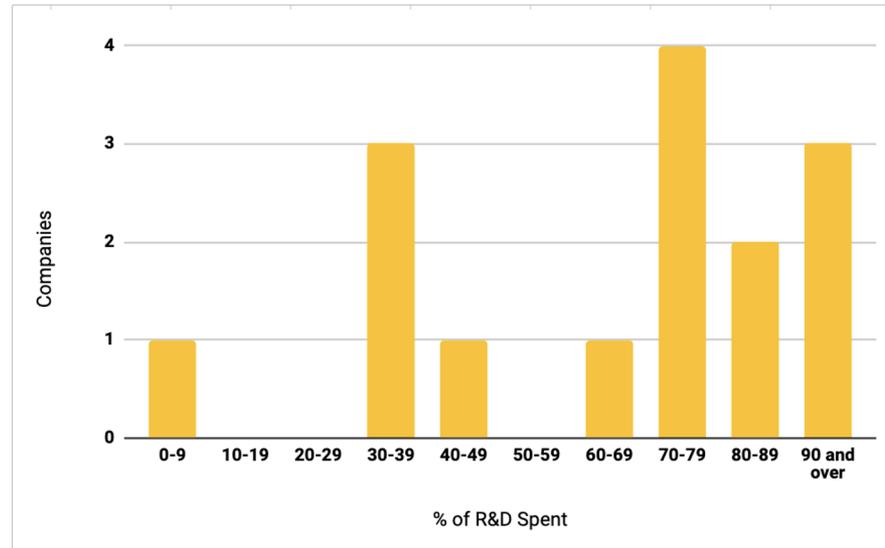
The membership undertakes considerable additional supply chain expenditure. Respondents (25 respondents) recorded supplier expenditure of £30.8m per annum, mostly across the UK. Where supplies could be geographically attributed, it was estimated that c£5.42m was spent within the South West Region and this is likely to underestimate impact as a result of difficulties in analysing the location of spend.

## R&D

All of those members who provided a response to the level of R&D spend (23 members out of 27) undertook some R&D activity. Of the remaining 4 members, 2 were related to the operation of Science Creates and the remaining 2 were early stage businesses and as such are likely to be involved in some R&D activity.

Some businesses reported on the level of R&D in terms of expenditure. These businesses, amounting to 8 in total, undertook £10.1m of R&D expenditure in 2022 (an average of £1.26m per business). The remaining businesses (15 businesses) reported on their R&D expenditure in terms of percentage of operational expenditure. The level of percentage expenditure ranged from 8-100% (with an average of 61%). The distribution of these businesses by percentage of activity is illustrated in the graph below:

Graph 10: Distribution of companies by percentage of R&D spend compared to operational expenditure



# Quantitative Analysis

## Collaboration

In addition to supplier expenditure and R&D expenditure, respondents set out their approaches to collaborations firstly in terms of the benefits of colocation within the Science Creates facilities or wider membership. Of the respondents, 59% do collaborate within the facility.

A second analysis considered overseas collaborations. As pre-revenue companies any overseas collaborations are a good indicator of future export potential and 56% of businesses did have overseas collaborations in place.

Table 5: Do members collaborate with other members?

	<b>Collaborates with other members</b>	<b>Does not collaborate with other members</b>
No of Companies	16	9

Table 6: Do members collaborate outside the UK?

	<b>Collaboration agreement outside of the UK in place</b>	<b>No collaboration agreement outside of the UK</b>
No of Companies	15	12

# Qualitative Results

## Introduction

Some of the questions posed to survey recipients involved descriptive or judgement responses and this provides some insight into the importance that members place on Science Creates.

## Location, Growth and the Attractiveness of Science Creates

Importantly, given the growth that businesses at Science Creates anticipate, larger numbers of businesses were considering alternative locations before they located at Science Creates than consider alternative locations for expansion. Survey recipients were asked to consider the likelihood of growth in the next year and 19 businesses (70.4%) anticipated growth with no respondents stating that growth would not happen.

When Science Creates members originally considered location 14 businesses or 51.9% of respondents considered an alternative location (including 4 considering locations outside the West of England) but in terms of expansion, 5 of the business considering expansion are considering increasing their geographic footprint outside the West of England.

Businesses assign value to the role of Science Creates and this value is categorised below – but the largest impact referenced by members is the availability of laboratory space they the businesses could not have created themselves.

Table 7: Impact of incubator according to member’s views

	<b>Membership of Incubator has contributed to Success</b>	<b>Membership of Incubator has not contributed to success</b>	<b>N/A or too early</b>
No. Companies	16	0	6

Table 8: Areas specified as contributing to success

<b>Measure</b>	<b>No</b>
<b>Available lab space</b>	7
<b>Business network</b>	5
<b>Recruit &amp; retain staff</b>	3
<b>Business support</b>	1

\*NB – businesses could specify more than one measure



# Survey Quotes

The survey provided some valuable qualitative data arising from quotes. Below is a summary of the key findings:

## Well designed and functional lab facilities

There is a shortage of lab space suitable for deep tech in the south of the UK.

→ **“The provision of lab space in a very challenging property market has been critical to enabling the company to turn its funding into scientific advancements”**

Science Creates provides well designed and safe lab space which are a key requirement for deep tech businesses. This provision has attracted businesses from outside the area ( i.e. Oxford), where the lab provision appears to be saturated.

→ **“Scientists are at the heart of the offering”**

## Science and research environment

The incubators spaces provide a science and research environment and community, which has led to a number of members being able to collaborate with each other. Collaborations include knowledge exchange , equipment sharing, supplies sharing, subcontract of specific tasks (i.e. material characterisation), recommendation on equipment purchase.

The links with the University of Bristol are also a factor in the attractiveness of the space, as they provide a natural home for spin-outs of the university.



# Survey Quotes

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## Access to a specialist ecosystem

The incubators provide a specialist ecosystem for deep tech start-ups and growing businesses. The support provided by the team is tailored to this market, in terms of events, funding advice, support and access.

→ **“Getting facilitated access to companies with specific knowledge is a big plus”**

The team has developed close working relationship with the members, and therefore understand the needs of their businesses.

→ **“The incubator provides an ecosystem in which there is significant knowledge sharing and access to ancillary services (both internal and external, i.e. through the incubators partnerships with service providers).”**

## Additional benefits

The location in the incubators has facilitated recruitment for some members due to easy transport routes, modern building and ecosystem.

The incubator also provides a professional image to start-up companies.

→ **“We have had multiple stakeholders comment on the Old Market Labs facilities positively. We actively ensure the lab is in the background of calls with stakeholders. We also associate our company with the incubator as the pedigree supports relationship building with external stakeholders”.**

# Survey Quotes



None of the respondents made negative comments about Science Creates and when asked “to what extent Science Creates contributed to your success”, more than half (53%) of the respondents provided a response.

This page provides a sample of some of the responses, aiming to evidence the range of support provided. In addition, **47% of members are planning to expand in the West of England.**

“Science Creates has been helpful in building and supporting our cleanroom lab in the St. Philips Incubator. This is critical resource for our production and R&D functions”

“It has allowed us to deliver research milestones while we didn’t have the equipment or funding to do it alone”

“The incubator and broader Science Creates ecosystem has provided business contacts and facilitated raising funds”

“Without the incubator’s help, support and network, especially in the early days, it would be highly unlikely we would have been able to reach the position we are today”

“Without the Science Creates incubator we wouldn’t have labs. Without labs we wouldn’t be able to scale beyond 3-4 scientists. Without the scaling of the team we could not have met our milestones or brought in significant grant funding. Science Creates unlocked the potential of our early stage business”

“The incubator is likely to have had a significant positive impact on the success of the business, including our ability to recruit and retain talent”

# Economic Impact



# Economic Impact

## Introduction

The economic impact of an activity is generally expressed in terms of Gross Value Added (GVA). The measure is frequently used to value the impact of an intervention – for instance, the impact that adding additional Science Creates facilities may have on the West of England Combined Authority area.

The standard approach to calculating GVA at the firm level is to undertake one of the following calculations:

Table 9: Calculating GVA

<b>Approach</b>	
Method 1	GVA = Operating Profit (before tax) + Employee Costs + Depreciation + Amortisation
Method 2	GVA = Turnover (or sales) less the cost of bought in goods & services (excl. employee costs)
<b>Proxy Values</b>	
Method 3	<p>Where turnover estimates are available, these can be converted to GVA by determining appropriate sectoral turnover to GVA ratios using secondary official data.</p> <p>Where employment estimates are available, these can be converted to GVA by determining appropriate sectoral employment to GVA ratios using secondary official data.</p>

# Economic Impact

The approaches to measuring GVA described will not necessarily apply to pre-commercial activity (such as the product development phase of a new start company), or a business with strong focus on R&D, during which calculations may suggest that ‘negative GVA’ can be generated as no income is being generated at a time when costs are being incurred.

Under these circumstances, R&D activity can be seen as an investment again future value and can therefore be treated as amortisation.

## Standard Approach

Using the proxy method to calculating GVA for Science Creates suggests the following value may be generated:

Table 10: Expected GVA from Science Creates using proxy values

Measure	Value
GVA from scientific research and development across Gloucestershire, Wiltshire and Bath/Bristol area in 2021 <sup>1</sup>	£1.243bn
Employment from scientific research and development across Gloucestershire, Wiltshire and Bath/Bristol area in 2021	10,975
GVA per employee (calculated from above)	£113,257
GVA Science Creates 370 jobs	£41.9m
GVA Science Creates grossed up jobs (563 jobs)	£63.7m

The results demonstrate that a gross proxy value for known GVA from Science Creates (based on employment from respondents) is £41.9m and its employment is grossed up on a similar employment proportion to member respondents to the survey, GVA might be expected to be £63.7m per annum.



# Economic Impact

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## Adjustments from Survey Data

The survey data suggests that the salary costs of employment by members of Science Creates is approximately £24.1m per annum and that total employment costs may be expected to include 30% on costs for National Insurance, pension, holidays and other benefits. Survey data also suggests local amortisable R&D supplier spend of c£5.42m.

Based on survey responses of 27 companies and 370 staff the gross GVA of Science Creates is estimated at £29.5m per annum and if this is grossed up for non-respondents to the survey the anticipated impact is GVA of £44.8m.

## Gross To Net Adjustment

Gross GVA is a reflection of the output of Science Creates but GVA can also be calculated as a net figure – where ‘net’ is the ‘net’ impact on the economy after adjustments for what might happen anyway (deadweight); where benefits are leaked from the economy (leakage); where activity at Science Creates displaces activity elsewhere (displacement); and for the multiplier impact that Science Creates generates for the economy activity stimulated in the wider supply chain (indirect multiplier) and the wages spent arising from employment (induced multiplier).

Net GVA figures are generally used for funding applications where the contributing agency seeks to understand the net impact of expenditure on the economy.

# Economic Impact



## Gross To Net Adjustment (continued)

The adjustments which may be made to the impact of Science Creates are below.

### Deadweight

The Science Creates initiative was undertaken by entrepreneurs from the City Region and has created a unique deep tech ecosystem. In the short term this is unlikely to be replicated and the qualitative findings from the survey suggest that many members have found the approach to be instrumental in their success. There is therefore a strong case to suggest that deadweight, at least within the region, is zero.

### Leakage

The economic benefit accrued from an initiative will differ according to the geographic location being considered. At a national level, the benefits of Science Creates are only likely to 'leak out' of the UK economy in a marginal way (overseas employees or suppliers) but at a West of England level the survey data suggests leakage of 71% for employment (and a higher proportion for supply chain expenditure)

### Displacement

The specialist nature of the deep tech ecosystem created by Science Creates is unlikely to directly impact on the employment of others undertaking similar work – but in an economy approaching full employment, it is likely that some low-level displacement in the labour market takes place even if the displaced activity generates a lower impact for the economy. Green Book guidance suggests that low level displacement is <25% and in this case 10% would seem appropriate.

# Economic Impact

## Multiplier Effect

The multiplier effect of different sectors has been estimated by the Scottish Government<sup>1</sup> and is frequently used as a proxy for the regional multiplier effect more generally. The GVA multiplier for research & development activity is 1.5. This is consistent with Science Creates generating c£18.5m of salary expenditure in the economy and supplier spend of £30.8m / R&D spend of c£34m (not mutually exclusive).

Table 11: Gross to Net adjustments for local impacts

	Respondents		Grossed up for non-respondents	
	Employment	Local amortised R&D	Employment	Local amortised R&D
<b>Gross</b>	370 + NEDs	£5.42m	563 +NEDs	£8.23m
<b>After leakage and displacement</b>	249		378	
<b>GVA</b>	£15m	£5.42m	£22.7m	£8.23m
<b>Total</b>	<b>£20.4m</b>		<b>£31m</b>	
<b>Overall net GVA per annum for West of England after multiplier</b>	<b>£30.6m</b>		<b>£46.4m</b>	

# Economic Impact

## Overall Impacts

The overall impact of Science Creates needs to consider the national impact of the activity plus the multiplier impact. It is this overall benefit which is the headline impact of Science Creates.

The values are set out as follows.

Table 12: Headline impacts of Science Creates

	Respondents		Grossed up for non-respondents	
	Employment	Local amortised R&D	Employment	Local amortised R&D
<b>Gross</b>	370 + NEDs	£30.8m	563 +NEDs	£46.8m
<b>GVA</b>	<b>£24.1m</b>		<b>£36.6m</b>	
<b>Total</b>	<b>£54.9m</b>		<b>£83.4m</b>	
<b>Overall net GVA per annum after multiplier</b>	<b>£82.3m</b>		<b>£125.1m</b>	

# Conclusion

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# Conclusion

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The overall impact of Science Creates is calculated from the salary plus on costs of those employed by members and by then taking the known supplier spend of tenants and, given that most businesses are pre-revenue, equating this cost to non-salary R&D activity which is essentially amortised as an investment against future discovery.

The final calculation includes the known multiplier impact of businesses involved in scientific R&D activities.

**On this measure Science Creates is estimated to generate £82.3m per annum in GVA from the comprehensive survey undertaken.**

**If the value generated is grossed up using an assumption that the non-respondents have similar characteristics to respondents then the overall GVA generated per annum of £125m.**



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