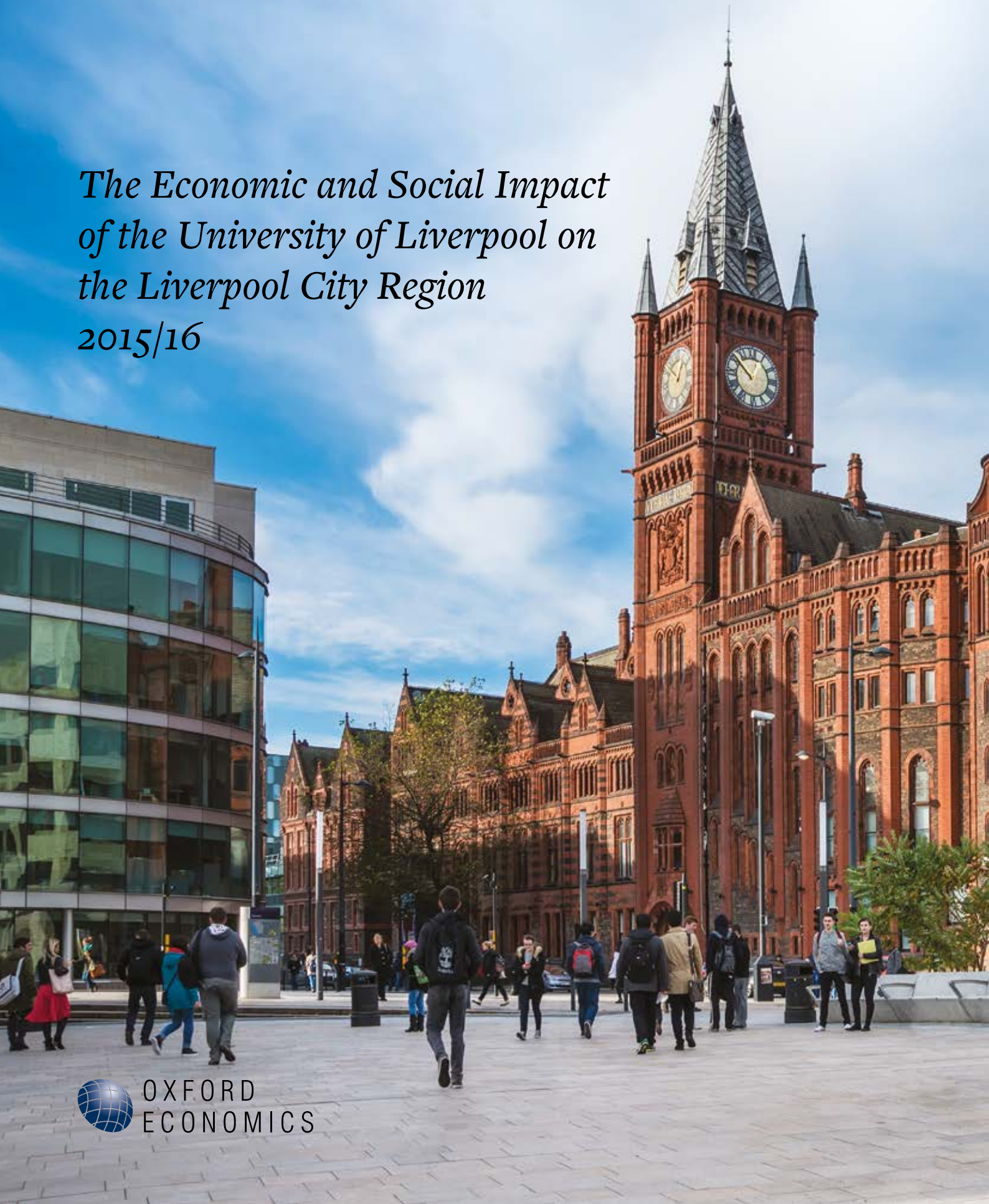
UNIVERSITY OF LIVERPOOL

The Economic and Social Impact of the University of Liverpool on the Liverpool City Region 2015/16



OXFORD ECONOMICS

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The reputation and profile of the University of Liverpool in the United Kingdom and overseas is intimately connected to the city of Liverpool and we are extremely proud to have been founded in 1881 by and for the citizens of our city. Our city has many special qualities, some of them uniquely Liverpool, and of late we have enjoyed an urban renaissance which has worked to the benefit of the University, its students and staff. We have also made a major contribution to this success - not least through a significant increase in our student population, a parallel growth in University staff and providing local jobs through a major programme of investment in our facilities.

It is no coincidence that the University's success is linked to that of the Liverpool City Region and we believe that it is important not only to recognise that relationship, but to actively nurture and develop it. We have produced this report to provide an evidence base for future partnership and growth and hope that it demonstrates the University's contribution both to life here now and its potential to inspire other organisations, community leaders and, indeed, our own staff to greater ambition.

As a member of the Russell Group of research-led universities, ranked in the top 1% of universities internationally, our reach is global. Ground-breaking discoveries in Liverpool make news and influence change across the world, and thousands of students from overseas as well as those closer to home choose to study at the University of Liverpool each year.

Some of the facts and figures presented here may surprise you. The positive direct impact of the University on the economy is, as you will see, substantial. But, while some of this information may be impressive at a glance, to us this is not simply about the numbers. From building a global network of alumni and carrying the Liverpool name overseas, to creating high quality partnerships that promote investment in the city region, to enabling social mobility and creating opportunities and a knowledge base that would otherwise not exist, we aspire to be a University that forms part of the economic and social fabric of the Liverpool City Region.

The famous redbrick Victoria Building is at the heart of our original campus. Our new £68 million Materials Innovation Factory, where we will deliver some of the most innovative research in advanced materials anywhere in the world, in partnership with another major local and global organisation, Unilever, is a striking example of how our 136-year-old vision remains relevant today. That vision, for advancement of learning and ennoblement of life, is about enriching lives through enlightenment and discovery whilst enabling people to fulfil their potential – and these are our ambitions for our students and staff, for the place to which we proudly belong, and for the world around us.

Vice-Chancellor, Professor Janet Beer

1 THE UNIVERSITY'S ECONOMIC CONTRIBUTION TO THE LIVERPOOL CITY REGION

The University of Liverpool is a major contributor to the Liverpool City Region economy, supporting employment and investment on a significant scale.

Nearly 11,000 jobs are reliant on the University in some way, either through direct employment or through spending by the University, its students and staff. The University attracts an annual income of nearly £500 million through delivering an extensive teaching programme and attracting substantial investment in its world-leading research. Our role in driving economic growth is significant too. Compared to a 4% increase in gross value added across Liverpool City Region between 2011-12 and 2015-16, the University's economic growth accelerated by 31%.[1]

The University's impact

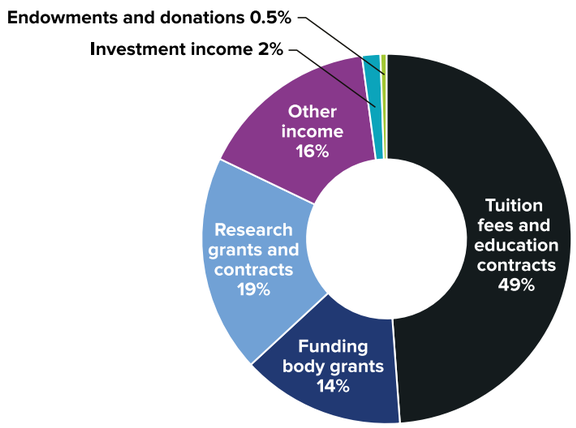
The University's own impact is made up of three channels: direct, which is the impact of the University's own spending running its operations; indirect, which is the economic activity supported by our spending on inputs of goods and services; and induced, which is the economic activity sustained by our staff, and those in our supply chain, spending their wages.

The University's direct impact

£491 million

In 2015-16, the University earned £491 million for the Liverpool City Region. Most of the income the University attracts - 82% - was received for teaching and research, but we also earned income by providing student accommodation, catering, and other services (Fig. 1).

Fig. 1. The University of Liverpool's Income, 2015-16



Source: University of Liverpool

10,790
jobs in Liverpool City Region are dependant on the expenditure of the University, our students and visitors

£652 million
in gross value added contributed to the Liverpool City Region's GDP in 2015-16

29%
growth in real gross value added supported since 2011-12

1 in every 57
jobs in the Liverpool City Region is supported by the University, our students and their visitors

17%
more jobs in 2015-16 than in 2011-12

2.2%
of the area's economic output is stimulated by the University, our students and their visitors

£152 million
in tax revenues are supported by the University, our students and visitors, the equivalent of funding for the Merseyside Fire and Rescue services for two years

1 Gross value added is the value of output a firm or institution produces, less the value of inputs used in that output's production.

£322 million

The University directly contributed £322 million in gross value added to the city region's GDP. That is 1.1% of the Liverpool City Region's entire economic output in 2015. It is broadly the same size as the contribution made by the utilities sector.

5,571 people

In 2015-16, the University employed 5,571 people in the Liverpool City Region. Our employment accounted for 0.9% of all jobs in 2015. To give a sense of scale, this is slightly more than all the people employed locally in the architecture and engineering sector (Fig. 2).

The University and its staff paid £72 million in income tax, and employee and employer's National Insurance contributions to HM Exchequer in 2015-16. This is equivalent to the annual salaries of 2,730 nurses, or the salary costs of all the nursing staff at the Royal Liverpool and Broadgreen University Hospitals NHS Trust for almost one and a half years.

The University's local supply chain

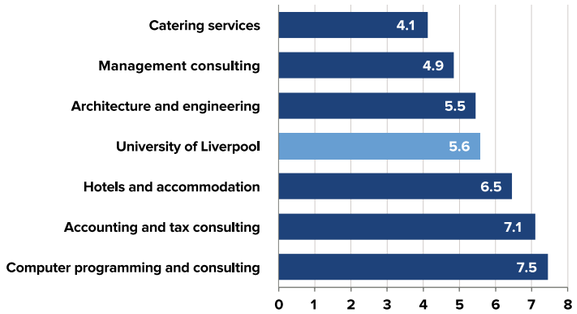
£73 million

In 2015-16, 42% of the University's total spending on goods and services was sourced from suppliers in the Liverpool City Region, totalling £73 million. (Fig.3).

890 jobs

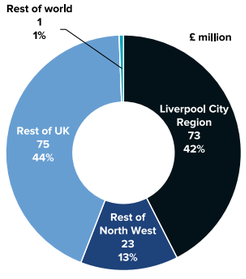
This expenditure stimulated economic activity in a wide range of industries across the city region. In total, our procurement generated a £48 million gross value added contribution to the Liverpool City Region's GDP, sustained 890 jobs and supported £11 million in tax revenues along our local supply chain. The industries that benefited the most were professional and technical service suppliers, and manufacturing (Fig. 4).

Fig. 2. The University's employment compared to other sectors in the Liverpool City Region, 2015-16



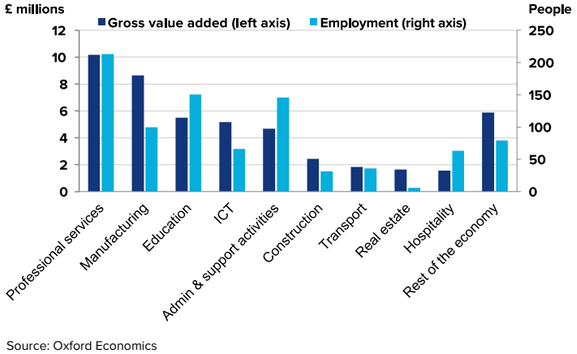
Source: ONS and Oxford Economics

Fig. 3. The University's procurement expenditure by region, 2015-16



Source: University of Liverpool, Oxford Economics

Fig. 4. The economic activity supported within the Liverpool City Region by the University's procurement, 2015-16



Source: Oxford Economics

Wage spending impacts

£144 million

The University paid £199 million in wages in 2015-16. Of this, £144 million (or 72%) was paid to staff who live in the Liverpool City Region. Their spending in local retail and leisure outlets stimulates economic activity in the local economy.

0.9%

Wages paid by the University to staff living in the Liverpool City Region account for 0.9% of the total wages received by residents in the area (Fig. 5). In the local authorities of Liverpool and the Wirral, this figure is higher, with University staff earning 1.7 and 1.0% of all wages received by residents.

We estimate the 890 people in our supply chain in the Liverpool City Region earned a further £36 million in gross wages. This plus our staff remuneration is estimated to have boosted consumer spending, making a £77 million gross value added contribution to the Liverpool City Region's GDP in 2015-16. This supported almost 1,190 local jobs and generated more than £23 million in tax receipts.

The University's total impact

£446 million

In total, the University supported a £446 million gross value added contribution to GDP in the Liverpool City Region in 2015-16. This is 1.5% of economic output generated in the Liverpool City Region.

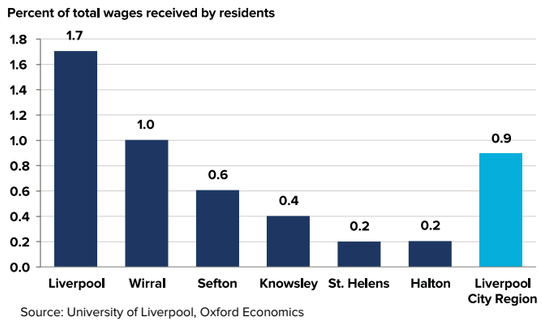
The University itself generated 72% of this contribution to GDP. So for every £1 million of gross value added generated at the University, a further £390,000 is generated elsewhere in the Liverpool City Region's economy (Fig. 6).

7,650 jobs

In 2015-16, the University supported 7,650 jobs in the Liverpool City Region. That is 1.2% of all jobs in the locality. Of these, 73% work directly for the University, meaning that for every 100 jobs at the University, a further 27 jobs are supported elsewhere in the Liverpool City Region.

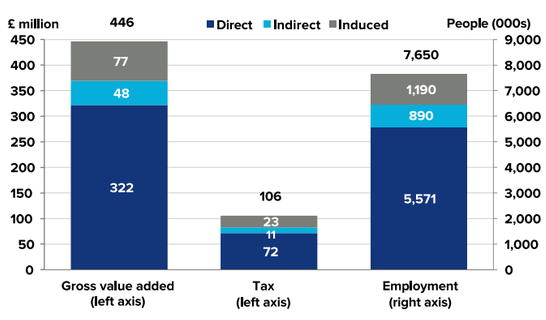
Total tax revenues generated by this employment and economic activity were £106 million.

Fig. 5. The University's payment of wages as a share of total received by residents of the Liverpool City Region and its six local authorities, 2015-16



Source: University of Liverpool, Oxford Economics

Fig. 6. The University's total expenditure impact on the Liverpool City Region, 2015-16



Source: Oxford Economics

Additional students' expenditure

In 2015-16, 21,500 of our students lived in the Liverpool City Region. Of these, an estimated 20,500 came from outside of the locality, or stayed in the area to attend the University.

This includes some 8,200 students who come from elsewhere in the UK, 8,000 from abroad, and 4,400 students who originated from the Liverpool City Region but would have otherwise left to study elsewhere.[2]

£342 million

The students attracted into or retained within the Liverpool City Region spent £342 million off-campus. Their expenditure stimulated £202 million in gross value added at local businesses. The industries in which economic output was boosted the most were housing rental by £74 million, retailing by £46 million, and transport by £27 million.

3,060 jobs

The spending by the students we attract or retain in the city region supported 3,060 jobs. This employment and economic activity generated tax receipts of £45 million.

Visitors to students and the university

Students from outside the Liverpool City Region are visited by their family and friends. In 2015-16, these visitors are estimated to have spent £6 million while here on accommodation, food and beverages, transport, and visiting cultural, sports and recreational attractions.

Spending by visitors generated £3 million in gross value added. It supported almost 60 jobs and generated £726,000 in tax receipts.

The University hosted 16 graduation ceremonies in 2015-16. More than 5,200 of our students returned to attend a graduation on the main campus, bringing 12,690 guests. They are estimated to have spent £1.1 million in the City Region.

The University held four Open Days for prospective students in the same year. An estimated 36,100 people attended, many of whom travelled to Liverpool from elsewhere in the UK and even abroad. This is estimated to have led to a further £1.3 million in spending being injected into the Liverpool city region.

Expenditure by visitors to the University's graduation ceremonies and Open Days stimulated £1 million in gross value added in the Liverpool City Region in 2015-16. This supported local jobs and £301,000 in tax revenues.

Total impact

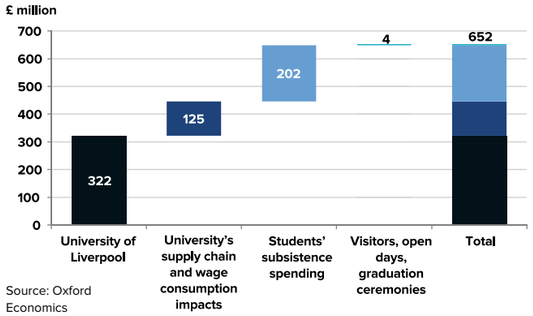
2.2%

The University, our students and the visitors they attract generated a £652 million gross value added contribution to the Liverpool City Region GDP in 2015-16 (Fig. 7). This is equivalent to 2.2% of the area's gross value added. The University and the students' subsistence spending provide most of the contribution.

1 in 57 jobs

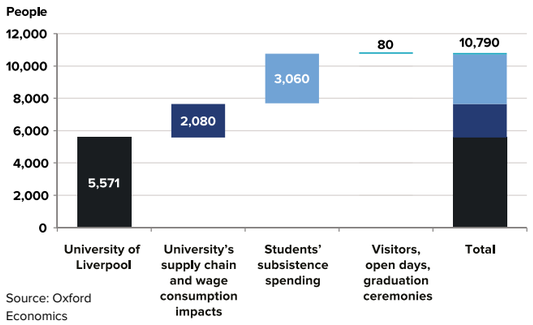
Some 10,790 jobs were supported by the University, its students, and visitors (Fig. 8). Around 1.8%, or 1 in 57, of the jobs in the Liverpool City Region are reliant in some way on the University. Some 52% of the jobs were at the University, with students' subsistence spending stimulating 28%. Tax revenues of £152 million were generated through this activity, the equivalent of the budget for the Mersey Fire and Rescue Service for two years.

Fig. 7. Impact of the University, its students and visitors on the Liverpool City Region's GDP in 2015-16



Source: Oxford Economics

Fig. 8. Impact of the University, its students and visitors on the Liverpool City Region in 2015-16



Source: Oxford Economics

Driving growth in the Liverpool city region

Our expanding operations have seen the University's earnings for the Liverpool City Region increase substantially since 2011-12.[3] This growth reflects a 19% expansion of our student population since 2011-12.

31%

Over the last decade, the University's direct contribution to GDP has increased more rapidly than the one made by the Liverpool City Region. We are therefore boosting local economic growth. The differential in growth rates is most evident since 2011/12. Taking inflation into account, the gross value added generated by the University has increased by 31% between 2011/12 and 2015/16 (Fig.9), compared to just 4% for the Liverpool City Region.

21%

The growth in employment at the University has also outstripped job creation across the Liverpool City Region over the last decade. Again the differential has accelerated recently. Between 2011/12 and 2015-16 the University's workforce has increased by 21% compared to 4% growth in employment in the City Region.

Because of our expanding operations, and greater number of students, our wider impacts have also increased. The University's indirect and induced impacts have grown as we spend more on goods, services and wages. More students bring further expenditure into the local consumer economy and attract a larger number of visitors every year.

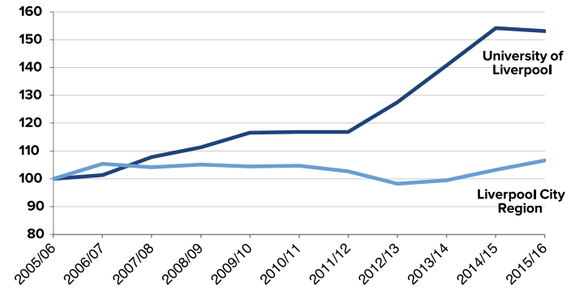
1.8% v 2.2%

The total gross value added contribution of the University, our students, and our visitors has increased by £170 million between 2011-12 and 2015-16. Our share of the Liverpool City Region's GDP has increased from 1.8% to 2.2%, reflecting our importance in the region's economic expansion (Fig. 11).

1.4% v 1.8%

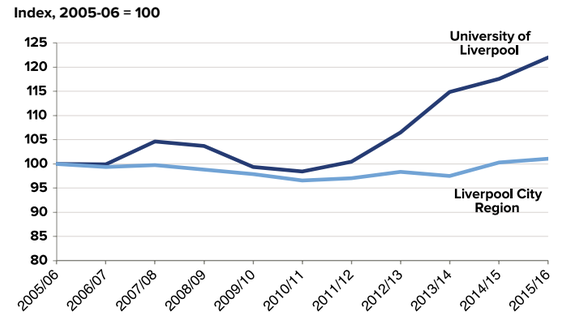
The number of jobs in the Liverpool City Region dependent in some way on the University, our students and visitors has increased by 1,570 or 17% since 2011-12. This means that 1 in 57 (1.8%) jobs are now at or supported by the University, compared to 1 in 70 (1.4%) in 2011-12.

Fig. 9. Real gross value added produced by the University of Liverpool and the Liverpool City Region, 2005-06 to 2015-16



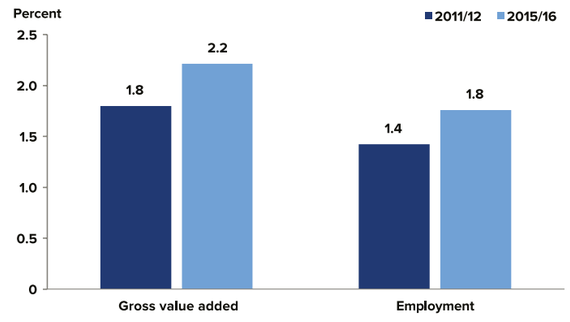
Source: ONS, Oxford Economics

Fig. 10. Employment at the University of Liverpool and in the Liverpool City Region, 2005-06 to 2015-16



Source: University of Liverpool, ONS

Fig. 11. The share of the Liverpool City Region's gross value added and employment attributable to the University of Liverpool, 2011-12 to 2015-16



Source: Oxford Economics

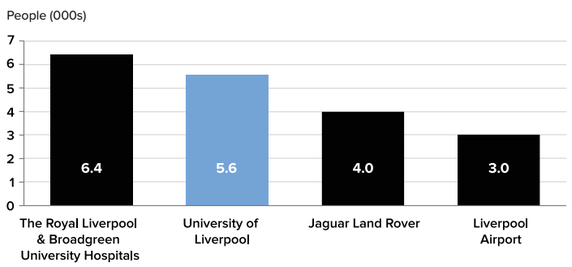
2 The number of students from the Liverpool City Region who would have otherwise moved away to University has been calculated using UCAS data on University of Liverpool applicants' insurance choices.

2 OUR PEOPLE INSPIRE

The University of Liverpool is the founding member of the prestigious Russell Group of world leading research intensive universities. Since our inception in 1881 we have attracted staff and students from all over the world to work and study here, bringing an influx of ideas and innovation that in turn create a huge range of economic, social and cultural benefits for the Liverpool City Region. Once graduated, our alumni are important ambassadors for both the University and the city with many holding highly influential roles in the UK and overseas. We are one of the largest employers in the Liverpool City Region. The University of Liverpool has a large workforce, employing 5,571 people in 2015-16, excluding atypical[1] staff. This makes us one of the largest employers in the Liverpool City Region, with 0.9% of the region's total employment on our campus. We employ more people than at the Jaguar Land Rover site at Halewood and Liverpool John Lennon Airport at Speke.

University of Liverpool staff

Fig.12. The University of Liverpool's employment in comparison to other significant employers in the Liverpool City Region

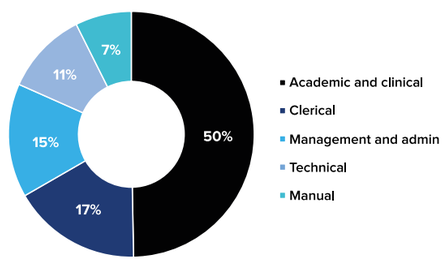


Source: Oxford Economics, organisations' accounts

The University of Liverpool employed 5,571 people in 2015-16, with 76% of them living in the Liverpool City Region.*

The University employs people from across the skills spectrum. In 2015-16, our teaching and research staff accounted for 50% of our employment. Clerical staff rank second at 17% of total, followed by management and administrative colleagues at 15%. Some 7% of our staff work in manual roles. (Fig.13)

Fig.13. University of Liverpool employment by category, 2015-16



Source: University of Liverpool

82%
Some 82% of our talent comes from the UK

11%
11% of our talent comes from other EU Member States and 8% were attracted here from the rest of the world

76%
Our staff are apart of the local community, with 76% living in the Liverpool City Region

90%
In our 2016 staff survey 90% of our employees said they feel proud to work for the University, and 93% said they enjoy their work

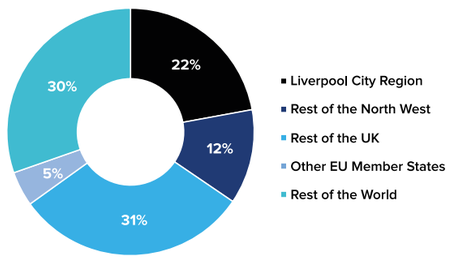
University of Liverpool students

Our students tell us that they chose to come to Liverpool because of the courses we offer, our global reputation which ranks us in the top 1% of universities world-wide and because of our location, in one of the UK's most vibrant student cities.

Our students come from over 130 countries world-wide and as a result of our highly successful joint venture branch campus on China, we have the 14th largest international student body in the UK. As a comprehensive University we have more than 250 undergraduate degree programmes, 150 postgraduate taught programmes and around 2,000 PhD students pursuing original research.

Demand to study here has grown considerably, with student numbers increasing by 32.5% over the last five years. The renaissance enjoyed by Liverpool since it was European Capital of Culture in 2008 has transformed our visitors' experience of the city with many now citing the importance of Liverpool as a location when choosing to study with us. (Fig.14).

Fig.14. Students by region of origin, 2015-16



Source: University of Liverpool

Case study:

Maike Pötschulat

(MSc Urban Regeneration and Management 2013) final year of her PhD in the Department of Sociology, Social Policy and Criminology. She is researching the phenomenon of 'Studentification'.

"I'm investigating how a growing student population can 'takeover' traditionally non-student neighbourhoods, altering the social and cultural balance and, over time, even influence the area's infrastructure. I'm particularly interested in how students engage with Liverpool as their university city."

24,100
Almost 24,100 students studied at the University in 2015-16, 22,300 of whom were based at the University's main campus in Liverpool

14th
The University has the 14th largest international student body in the UK, with 1.7% of the total

2nd
The University of Liverpool is the second largest recruiter of international students in the North West

8,500
In 2015-16, we attracted 8,500 students (or 35% of our total number) from abroad to the Liverpool City Region. Our international students hailed from more than 130 countries

22%
The University attracts students from many parts of the globe to the Liverpool City Region, but it also retains its local roots. In 2015-16, 22% of students were originally from the Liverpool City Region

20,500
In 2015-16, the University attracted or retained almost 20,500 students to live in the Liverpool City Region. These 'additional' students to the local area are comprised of:

8,200 from elsewhere in the UK

8,000 international students

4,400 from the local area who would otherwise have gone elsewhere to study.

These additional students live, study and learn in the Liverpool City Region boosting the local economy and stimulating extra employment

19%
Student numbers have grown by 19% or 3,900 people over the last five years

20%
Undergraduate applicants grew by 20% for 2015 entry (UCAS data 2015)

36,100
Some 36,100 people are estimated to have visited the University in our four Open Days in 2015-16. This benefits the local transport, hospitality and hotel industries

78%
78% of undergraduate applicants indicated that 'being in a lively city' had influenced their decision to accept their offer

1 Atypical employment includes short term employment such as guest lecturers.

University of Liverpool Alumni

The University has more than 211,000 alumni in 171 countries across the world, providing the University and Liverpool with a global network of ambassadors and friends.

Case study:

David Williams

(BA Business Studies 2012) and co-founder of Independent Liverpool.

Studying at the University strengthened my love for Liverpool and made me realise I wanted to stay here and put my own city on the map.

Independent Liverpool started as a blog, then became a membership card, events, a website; but it's so much more than that, it's a movement. For me it's a notion, the idea of shopping local, supporting your own and it's transformed so much over the last four years. It stands to support Liverpool and local enterprise.

Case study:

Gael Decoudu

Head of Data Science and Digital Analytics, ShopDirect

We're proud of our long standing relationship with the University of Liverpool. It seems to grow bigger and stronger every year. Having a world-class Russell Group university on our doorstep, especially one that puts emphasis on employability, is really important to us. There's a focus on applying academic theory to real life scenarios at the University, which means the students we speak to are able to start thinking and innovating commercially. We've hired some excellent students, from undergraduates to PhDs from STEM subjects, to bolster our customer intelligence teams. We're also welcoming interns and MSc students for their final projects, developing research partnerships with the faculty on applied research topics and providing scholarships to PhD students. Conducting guest lectures has also allowed us to develop a two-way partnership.



92%
Official data shows that our students are highly employable; 92% of our 2014-15 graduates were in work or further study six months after graduating

25%
of our employed graduates have found jobs in the Liverpool City Region six months after graduating

30%
of our 2014-15 graduates employed in the Liverpool City Region work in healthcare, health and the sciences

33
graduate start-ups had survived more than three years in 2015

3 OUR RESEARCH DELIVERS

Advancing knowledge

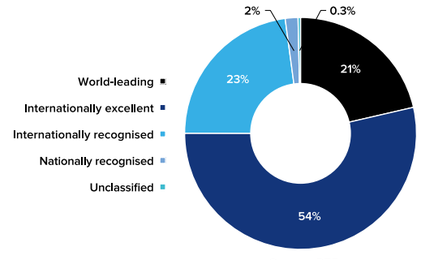
At the forefront of innovation and discovery, academics and researchers at the University of Liverpool are advancing knowledge to improve lives. Our leading research is driving breakthroughs in developing new materials with large-scale applications in both industry and consumer products, enhancing the personalisation of health management, and progressing the battle against infectious diseases.

We offer unlimited potential for researchers at all stages of their career and in many areas and disciplines, to have direct positive effects on our world. Our strengths lie in our people, partnerships and the strategic networks we have both locally and globally.

81%
In the last assessment of UK university research excellence, the Research Excellence Framework (REF) published in 2014, 81% of our research overall was graded as world-leading or internationally excellent.

This is underpinned by our research environment, including our facilities, research income, staffing and postgraduate student support being rated as 35% world leading and a further 59% as internationally excellent.

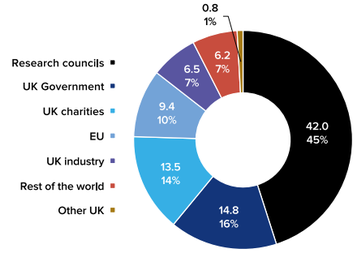
Fig.15. Research outputs in REF 2014



Source: REF

£93 million
In 2016, the University spent £93.2 million on research. Of this, 45% or £42 million was provided by research councils and a further 16% or £14.8 million from the UK government. Some £6.5 million or 7% came from industry and a further £13.5 million from charities.

Fig.16. University of Liverpool research funding by source

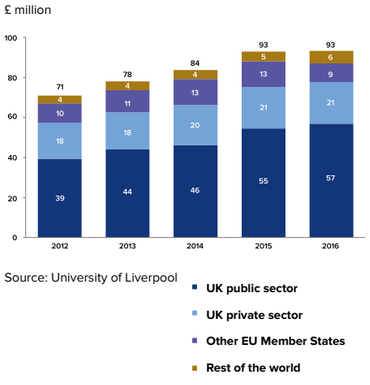


Source: University of Liverpool

17%
The University attracts considerable research funding from overseas, which represents significant export earnings for the UK. Some £15.6 million, or 17%, of our research funding originated from abroad in 2015-16.

59%
The University has increased its investment in research from all funding sources over the past five years. Funding from countries outside of the EU has seen the largest increase, of 59%, since 2012. Our funding from UK public sources has also gone up 45% over this period.

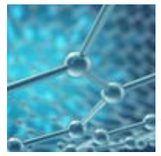
Fig.17. University investment in research



Source: University of Liverpool

Our established knowledge leadership

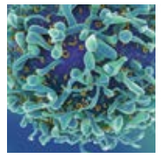
Advanced materials



Liverpool leads the design of functional materials and is breaking new ground in this field.

Supported by our dynamic new Materials Innovation Factory, we are actively looking for new materials that can have large-scale applications in both industrial manufacturing, healthcare and consumer products. Our leading research in the field of advanced materials influences developments in a wide range of fields from catalysis, filtration and absorption of pollutants to battery and fuel cell technology.

Infectious diseases



With over a century of discovery and translational research in infectious diseases, the University of Liverpool is a recognised leader in this field.

Our work covers both global health problems, national and local issues. The depth and breadth of our clinical expertise in infectious diseases, capability in translational science and facilities for undertaking preclinical work and clinical trials exemplify the University's world class status in this field of research.

Our interdisciplinary approach seamlessly brings together medical and veterinary science with a focus on emerging infectious diseases and zoonoses (diseases that spread from animals to humans).

As a pioneer in infection and global health, the University is in a prime position to respond when new global threats emerge, such as the recent Ebola crisis and Zika epidemic.

Personalised health



Combining our world-leading pharmacology and genomics research paves the way for uniquely treating individuals based on their genetics and other health data.

The future of treating cancers and other diseases lies in improved assessment of disease risk, improved diagnosis and stratifying patient groups for genome-guided treatment options.

With a state-of-the-art Biobank and initiatives like the Futures project which is genotyping 3,000 health volunteers (including 1,000 of Chinese origin), access to first class clinical research facilities at the Royal Liverpool University and Alder Hey Children's Hospitals, we are well placed to undertake first-in-human and early phase clinical studies. Facilitated by Liverpool Health Partners our strong industry partnerships can deliver a complete system from bench-to-bedside and patients from babies through to the elderly.

The Liverpool City Region's Science and Innovation audit (SIA)

The University has played a leading role in progressing the development of the Liverpool City Region's Science and Innovation audit (SIA), working alongside partners including Liverpool City Council and the Liverpool City Region Local Enterprise Partnership.

Through a systematic review of capabilities and competitive strengths in academia, the wider public sector, and the private business base we have identified three areas where our Science and Innovation performance is world-class.

In Infection our long-standing collaboration with the Liverpool School of Tropical Medicine gives the largest internationally excellent research community outside the South East. We are utilising world-class collaborative strengths to tackle human and animal infectious diseases and support new device and vaccine development.

In Materials Chemistry we have a unique world-leading hub in new materials discovery, underpinned by a high ranking in UK and global research measures in Chemistry, and innovative partnerships with companies such as Unilever and Croda.

In High Performance and Cognitive Computing we have a strong partnership with the Hartree Centre and other computing partners, which complement our recognised strengths in Computer Science and give opportunities to accelerate knowledge discovery and industrial application across the region.

The ways we have added value to SIA partners and the wider SIA process has been fivefold, namely by acting to provide:

- Strategic leadership and catalysis: articulating and communicating our city region's science and innovation strengths, and identifying relevant opportunities and solutions to our partners locally and in Whitehall
- Strategic influence: stimulating activity as a core part of the SIA process which has helped define the distinctive roles of partners, got them to commit to the SIA's shared strategic objectives, and supporting them to behave and allocate their resources accordingly
- Leverage: by providing our own financial inputs and people at the heart of the SIA process to mobilise wider partner and stakeholder resources
- Synergy: using our own organisational capacity, knowledge and expertise to improve information exchange, knowledge transfer, and integration amongst our SIA partnership
- Engagement: enabling and supporting the various mechanisms and channels the SIA development process has used to bring about more effective and deliberative engagement of stakeholders in our science and innovation priorities for our city region.

£10 million
Advanced Materials Leverhulme Grant win

4,000

Over 4,000 staff and students pursing world leading research in 2015-16

1,300
academic staff

700
specialist technical staff

2,100
postgraduate research students

Associated with 9 Nobel Laureates

Sir Ronald Ross
Professor and Chair of Tropical Medicine, 1899-1912

Charles Barkla
BSc (Hons) Mathematics 1898, MSc 1901, Hon LLD 1931

Sir Charles Sherrington
Holt Professor of Physiology at Liverpool, 1895-1913

Sir James Chadwick
Lyon Jones Chair of Physics at Liverpool, 1935-1943

Sir Robert Robinson
Chair in Organic Chemistry, 1915-1920

Har Gobind Khorana
PhD 1948, Hon DSci 1971

Rodney Porter
BSc (Hons) Biochemistry 1938, Hon DSci 1973

Ronald Coase
Assistant Lecturer in Commerce, 1934-1935

Professor Sir Joseph Rotblat
PhD 1950, Hon DSci 1989

Case study:

Virtual Engineering

The University of Liverpool's Virtual Engineering Centre (VEC) provides businesses with the opportunity to access world-leading academic research and high tech facilities, with the aim of finding innovative solutions to industry problems. In particular, the centre provides small businesses with access to data and virtual technologies that would otherwise be out of their reach.

One of the VEC's most successful projects to date is STRIVE, a three-year collaborative research and development project between the centre, Bentley, and small and medium sized enterprises (SMEs) in the Liverpool City Region. Bentley sought to improve its manufacturing process through digitisation and, with funding from the Advanced Manufacturing Supply Chain Initiative (AMSCI) and the European Regional Development Fund (ERDF), the VEC enabled local businesses to provide solutions.

Following on from STRIVE's success, the VEC is part of a new regionally focused project, LCR 4.0. The project provides a virtual workspace for the Liverpool City Region's manufacturing community, which aims to demonstrate to SMEs the potential of data driven innovation.

Case study:

Low Carbon Eco-Innovator

Launched in 2016, the Low Carbon Eco-Innovatory (LCEI) is a collaboration between the University of Liverpool, Liverpool John Moores University and Lancaster University, which helps small and medium sized enterprises (SMEs) in the Liverpool City Region to create innovative low carbon goods, processes and services.

To date, the LCEI has seen 143 successful projects, contributing a combined 1,600 tonnes reduction in greenhouse gas emissions.

A research PhD programme, Marlan Maritime Technologies explores the use of digital photography in tracking changes in tides, waves, sea-levels and storms, is testing whether using this technology to provide timely information on the coastline will enable early intervention to repair erosion, preventing catastrophic flooding and saving carbon by reducing the need for concrete and steel repairs.

Case study:

Liverpool ChiroChem Ltd

In collaboration with the Department of Chemisty, Liverpool ChiroChem was set up in 2014 to support and operate in the supply chain of pharmaceutical research and development (R&D), supplying specialist chemical Chiral building blocks that enable laboratory based researchers to discover and build new drug molecules.

LCC has devised faster and cheaper methods of producing purer chemicals used in medical research and supported clients like Liverpool-based Redx Pharma, who are looking to develop new treatments for cancer. In 2015 ChiroChem won the Bionow Start Up of the Year Award and was the Merseyside Innovation Award Winner.

Investing over £400 million in the estate including:

£36 million
Engineering project to support increased research activity in Bio engineering, flight simulation, selective laser melting, explosive loading and a vibration loading facility to better serve the automotive industry.

£35 million
Investment in the William Henry Duncan Building to provide state-of-the-art facilities to help create a unique research and industry environment to help maintain the University's position as a world leader in medical research. It accommodates the Liverpool Bio Innovation Hub (LBIH), which provides a space for small and medium sized enterprises (SMEs) working in the biomedical sector and is home to researchers, clinicians and postgraduate students alongside valuable resources such as a large, purpose-built biobank.

£27 million
A new biomedical research facility, the Ronald Ross Building, providing state of the art containment level two and three laboratories and a Biomedical Services Unit. Home to around 200 scientists at the forefront of research into pneumococcus, diarrheal disease and emerging infections, it brings together the brightest minds from medicine, biomedicine, veterinary health, and biological sciences.

Case study:

Materials Innovation Factory

The University of Liverpool and Unilever have a long-standing and successful partnership of product and process innovation which has led to strategic investment in the Centre for Materials Discovery (CMD), the High Throughput Formulation Centre (HTFC) and the Micro Bio Refinery (MBR).

The latest collaboration is the development of the Materials Innovation Factory (MIF), an 11,600m2 facility able to accommodate 300 researchers from any academic and industrial background.

Built with support from Unilever and HEFCE's UKRPIF, the £68M MIF is a key asset for the University of Liverpool and Liverpool's growing Knowledge Quarter and responds to a key component of the UK's current industrial strategy – advanced manufacturing.

With a vision to be the world leader in Computer Aided Material Science (CAMS) by 2020, the MIF project recognises that future global economic competitiveness will need to be underpinned by the ability to innovate: in new materials, in systems and in technologies applicable to a wide range of manufacturing sectors.

Industrial clients and researchers will be able to take advantage of world-class materials science, leading-edge robotics and data interpretation supported by a dedicated team of highly trained technicians and academic staff.

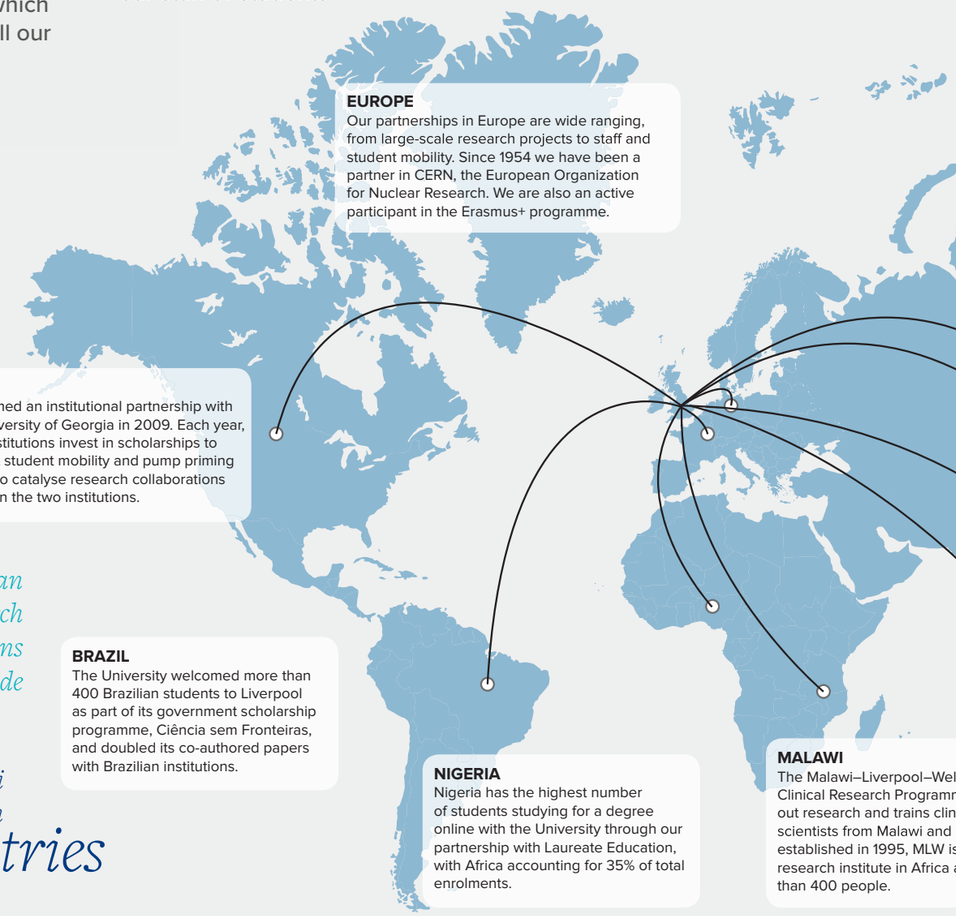
4 WE ARE GLOBAL

Our global outlook

As a connected global university we attract staff and students from over 130 countries worldwide and we also create opportunities for all our staff and students to explore international opportunities around the world too.

We achieve this through our global network which includes physical and virtual campuses as well our research and mobility partnerships too.

In 2015-16 we attracted 1,260 staff from abroad to work at our campus in Liverpool and over 8,000 international students to study with us. As a result of our approach to internationalisation some 16% of the foreign residents in the Liverpool City Region were our staff or students.



8,000 postgraduate students worldwide

CHINA
In 2006 we opened Xi'an Jiaotong-Liverpool University (XJTLU) in partnership with Xi'an Jiaotong University – a top 10 university in China. XJTLU is now the largest international collaborative university in China, with over 9,000 students and a growing reputation for research. XJTLU is also the base for our innovative Year in China programme.

EUROPE
Our partnerships in Europe are wide ranging, from large-scale research projects to staff and student mobility. Since 1954 we have been a partner in CERN, the European Organization for Nuclear Research. We are also an active participant in the Erasmus+ programme.

53% of research outputs internationally co-authored

SINGAPORE
In 2013 we established University of Liverpool in Singapore as part of a partnership with Singapore Institute of Technology and Singapore's Home Affairs Ministry, leading to the development of a three-year undergraduate degree in Criminology and Security.

6,900 international and EU undergraduates from 132 countries

TAIWAN
The University has offered a dual PhD with National Tsing Hua University Taiwan since 2013. Up to five students are selected each year and the partnership is supported by an active programme of staff mobility and research workshops.

Ranked in top 150 by the Academic Ranking of World Universities

Campuses and major partnerships in Liverpool, China, Singapore and the Cayman Islands

USA
We formed an institutional partnership with the University of Georgia in 2009. Each year, both institutions invest in scholarships to support student mobility and pump priming grants to catalyse research collaborations between the two institutions.

THAILAND
Each year over 25 postgraduate students from the University travel to Thailand to undertake summer research internships in biological sciences at Chulalongkorn University and Khon Kaen University. Liverpool also has a longstanding relationship with Mahidol University, with research collaborations and PhD scholarships in a number of areas.

Over 100 partnerships facilitating student mobility

More than 2,700 research collaborations worldwide

BRAZIL
The University welcomed more than 400 Brazilian students to Liverpool as part of its government scholarship programme, Ciência sem Fronteiras, and doubled its co-authored papers with Brazilian institutions.

NIGERIA
Nigeria has the highest number of students studying for a degree online with the University through our partnership with Laureate Education, with Africa accounting for 35% of total enrolments.

MALAWI
The Malawi–Liverpool–Wellcome Trust Clinical Research Programme (MLW) carries out research and trains clinical and laboratory scientists from Malawi and overseas. Officially established in 1995, MLW is now a leading research institute in Africa and employs more than 400 people.

INDIA
In 2015 we were awarded three prestigious Newton Bhabha Grants for projects with Christian Medical College, Vellore and the National Institute for Mental Health and Neurosciences (NIMHANS). Liverpool has collaborated with NIMHANS for over a decade and a dual PhD programme has been in place since 2013. We have also welcomed 25 Indian academics to Liverpool as part of our visiting Fellowship programme, which was launched in 2014.

8,000 students online from over 200 countries

211,000-strong alumni community from 171 countries

Powered by partnerships



Case study:

Xi'an Jiaotong-Liverpool University

In 2006, the University opened Xi'an Jiaotong-Liverpool University (XJTLU) in partnership with Xi'an Jiaotong University – a top 10 university in China.

XJTLU has been a phenomenal success and has grown rapidly since it was established with more than 9,000 students now studying subjects including Computing, Maths, Engineering, Architecture, Biological and Chemical Sciences, Business and Civic Design.

XJTLU is based in the world heritage city of Suzhou, which has a population of four million and is located half an hour from Shanghai by bullet train. The campus is located in Suzhou Industrial Park (SIP), one of Asia's most successful business parks - a hub for foreign investors and home to 3,300 international organisations, including 84 Fortune 500 companies.

There are currently 2,700 undergraduates from XJTLU completing part of their degree at Liverpool, bringing a fantastic international flavour to our campus. Our relationship with XJTLU also gives our students the opportunity to gain experience in the world's second largest economy by replacing a year or a semester in Liverpool with one in China.

An independent Sino-foreign cooperative university, XJTLU captures the essence of both prestigious parent universities and is the first of its kind to be approved by the Chinese Ministry of Education.

Case study:

Liverpool International College

The Liverpool International College (LIC) offers pathway courses that guarantee students entry to the University of Liverpool on successful completion. Almost 1,200 students of 59 nationalities studied at the college in 2015-16. As fully registered University of Liverpool students from day one, they have full access to all the facilities of the University, as well as the college's own facilities and teaching staff.

LIC, which operates through a partnership between the University and Kaplan, recruits and prepares more than 800 international students for entry into the University's degree programmes each year with courses in academic skills, key subject knowledge and English language.

LIC submitted plans in 2016 to develop a new 'live-learn' facility in the new Knowledge Quarter where Grove Street intersects Smithdown Lane.

The new facility is due to open in 2019 and will:

- Deliver 47,000 sq ft on 13 storeys of cutting-edge academic, residential and administrative space with an impressive three-storey atrium
- Provide a home away from home for the international students with 259 beds in larger single bedrooms, in a mix of cluster and studio apartments, all en-suite, with enhanced storage
- House a café, Knowledge Hub, study booths, and social area with game and study zones with expanded opening hours to suit students' varied schedules.

This new build is part of the £1 billion Paddington Village development, and marks the start of a significant investment in the development of Liverpool's Knowledge Quarter.



Case study:

Online degrees with Laureate Online Education

As Europe's largest provider of online degrees through our partnership with Laureate Online Education, we offer 42 fully online postgraduate certificates, master's and doctoral degrees in a flexible, international and collaborative learning environment aimed at helping global working professionals to enhance their career prospects. More than 10,000 students from over 160 countries study online, enjoying a flexible and engaging mode of study that provides them with the knowledge and skills to achieve immediate professional impact.

The University's Laureate Online Education programmes served more than 16,700 students in 2015-16. Graduations are held in Liverpool and draw in significant numbers of visitors, as well as establishing a long term affinity with the city for students across the globe.

Case study:

Malawi-Liverpool-Wellcome Trust Clinical Research Programme

Malawi-Liverpool-Wellcome Trust Clinical Research Programme (MLW) is a clinical research programme which conducts research on diseases of local importance to Malawi and the region. The University works in partnership with the College of Medicine (COM), University of Malawi, Liverpool School of Tropical Medicine, via the Wellcome Trust Tropical Centre. MLW also encourages other collaborations with centres of excellence in the region and worldwide. Wellcome Trust (UK) is the programme's major donor.

The economic impact of our international students

Our international students generate significant economic benefits for the Liverpool City Region. Their off-campus spending, and that of family and friends who come to visit, supports local businesses.

In 2015-16, we received £102 million in tuition fees from international students. We also estimate they paid £11 million to stay in our accommodation, use our catering facilities and bars.

International students are estimated to have spent £131 million elsewhere in the Liverpool City Region in 2015-16. This includes rent payments for private accommodation and spending on food, travel, and personal items.

International students' off-campus spending generated £85 million gross value added for the Liverpool City Region economy. It also supported almost 1,260 local jobs and generated £18.8 million in tax revenue for the UK government.

The spending of international students' visitors, including overseas graduation and Open Day attendees, generates further economic contributions. Their £5 million spend generated a £2.4 million gross value added contribution to the region's GDP supported more than 50 local jobs and delivered £605,000 in tax revenues.

Taking these two streams of income together, this means that the University's international students' off-campus spending accounted for 0.3% of all the Liverpool City Region GDP, and 0.2% of all the jobs in the local area. This impact is above and beyond that supported by their tuition fees and other payments to the University itself, sustaining local businesses throughout the region.



1,260
In 2015-16, the University attracted 1,260 staff from abroad to work at its campus in the Liverpool City Region

100
Some 8,500 international students came to be educated and undertake research, 8,000 of whom lived in the city region. This is supported by work with around 100 sponsors world-wide, at least 20 of whom consistently send students to the University from abroad

9,260
The University of Liverpool is a global recruiter of both staff and students. In 2015-16, 9,260 people or 16% of the foreign residents in the Liverpool City Region were our staff or students

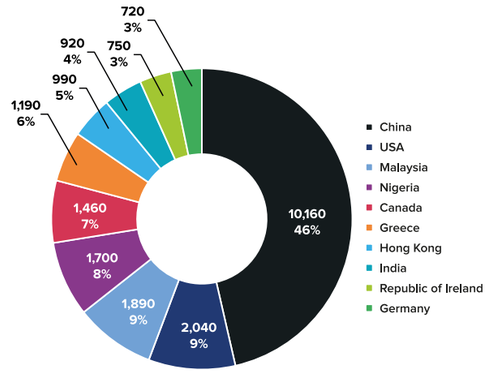
Our International Alumni

The University has more than 211,000 contactable alumni, living in 171 countries across the world. Of these, over 37,000 live outside of the UK. The largest concentration of international alumni live in China and there are also significant numbers living in countries including the USA, Malaysia, Nigeria and Canada (Fig.18).

Our international alumni are very proud of their connections with the University and the Liverpool City Region more widely. This brings economic benefits to the locality.

In a recent survey of our alumni, 57% of respondents told us that since leaving the University they had returned to the Liverpool City Region, spending money in the tourist and hospitality industries. Of these, 54% had returned more than three times and 34% more than five times. Some 74% rated it extremely or quite likely they will visit the city region in the future.

Fig.18. Alumni by home country



A long term relationship with the Liverpool City Region

They also serve as informal ambassadors. Some 84% had recommended visiting the Liverpool City Region. These recommendations carried some weight. For 49%, three or more people had followed their advice and actually visited the Liverpool City Region, and for 30% five or more people had come. Looking forward, 82% were extremely likely or quite likely to recommend visiting the Liverpool City Region in the future. Some 7% have ongoing business links with the Liverpool City Region.

Case study:

Dr Punam Bijlani Plastic Surgeon, (MSc International Management 2016)

From Mumbai, India, consultant plastic surgeon Dr Punam Bijlani heads Medcare hospitals' plastic surgery services in Dubai, UAE. As a 2016 graduate, she's understandably proud of her master's degree – awarded after over three years of online study.

Juggling demanding professional and personal commitments, Dr Bijlani found the flexibility of studying online in her own time also gave her valuable experience in working in a digital world.

"The online degree was just as good as an on-campus degree – especially for sciences like management and IT where it actually gives you an insight because most of management and IT is a lot of online work," she said.

Capping her hard work and dedication to her studies, Dr Bijlani celebrated completing her master's degree by attending the graduation ceremony on campus in Liverpool.

Hosting International Conferences



The University attracts thousands of visitors to the Liverpool City Region to attend our international conferences. In 2015-16, the University organised three international events, two of which were hosted at ACC Liverpool, and one at the University itself. Some 1,430 delegates attended over the 13 days, which brought £3.2 million into the Liverpool City Region.

The University's International Media Reach

The University, our academics and their research get into media all around the world. This creates positive publicity for the Liverpool City Region, boosting the likelihood tourists will come from abroad and individuals and firms will buy exports from companies associated with the local area, as well as fostering direct investment from overseas.

In 2015-16, our name appeared in the international media in 9,995 separate newspaper and other articles. These outlets had a total readership of 806 million people.

Analysed by continent, the University's name appeared in the press the most times in North America. The top 10 countries by estimated readership of articles containing our name were the United States, China, South Africa, Canada, India, Australia, Nigeria, Singapore, Switzerland and Russia.

One popular metric as to the value the University and Liverpool City Region get from this coverage is its advertising value equivalent (or AVE).

This refers to the cost of buying the space taken up by a particular article, had the article been an advertisement. It is estimated our press coverage abroad was worth £349 million in 2015-16.

9,995
articles published in international media

£349 million
The advertising equivalent value of our foreign press coverage

5 WE DRIVE SOCIAL MOBILITY

Our Social Impact

The University not only drives economic impact but places great importance on having a wider social impact too . We demonstrate this ethos through our approach to outreach and student recruitment, the important contribution our staff, students and alumni make to the wider wellbeing of the city region, our fundraising priorities and our important role in stimulating debate about important societal challenges.

The University of Liverpool is committed to creating opportunities for all

We are a world-leading research intensive University, committed to creating opportunities for all students and we are proud of our reputation as one of the most successful Russell Group universities for widening participation to Higher Education. This year (HESA 2015-16) we ranked first in the English Russell Group for the recruitment of students from low participation neighbourhoods and also first for the recruitment of students from state schools and colleges.



1st
We rank first in the English Russell Group as a recruiter of students from low participation neighbourhoods and students from state funded schools

£1.5 million
In 2015-16, we spent £1.5 million on outreach programmes aimed at increasing the educational opportunities for those from backgrounds which are typically under-represented in higher education

£9.7 million
We spent a further £9.7 million providing financial support to students from segments of society that are under-represented at higher education institutions in 2015-16. This benefited 5,234 students, 22% of our student body

345
We work with 345 target schools and colleges, that teach high numbers of pupils from low income families.

Our staff and students are committed to making a wider contribution

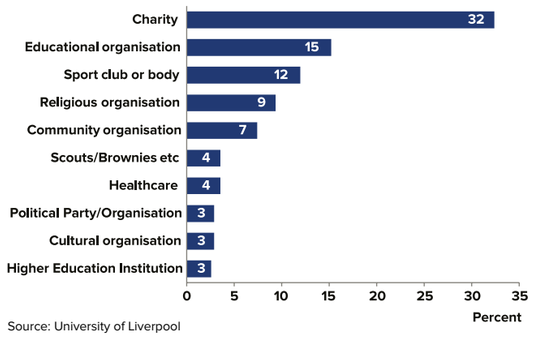
At the University there is a strong sense of the importance of social responsibility. This is reflected by the many aspects of work and the wider contribution that we, our staff, students and alumni make to directly advance social goals.

Staff Volunteering

43%

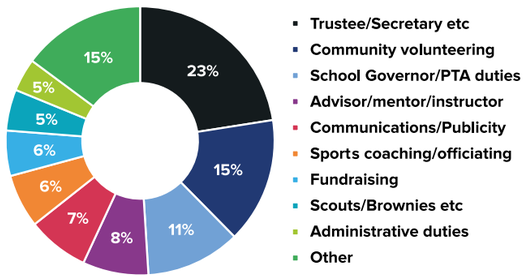
A recent survey of our staff found that 43% of respondents volunteer on a regular basis. On average, these staff give up eight hours per month for voluntary work. Based on a full time equivalent salary (after taxes) of £34,451, based on 35 hour week contracts our staff give up £365,000 a year of their spare time.

Fig.19. The ten most popular type of organisations our staff volunteered with in the last year



Source: University of Liverpool

Fig.20. The roles undertaken by our staff who volunteer



Source: University of Liverpool

Student Volunteering

As part of Volunteering Liverpool, a partnership between different higher education institutions in Liverpool, our Guild of Students helps match students to a range of volunteering opportunities. Volunteers help out on campus, in schools, with charities, and in the community as well as co-ordinating fundraising efforts. Volunteering Liverpool approved 610 opportunities in 2015-16 for 313 approved organisations.

Interchange

Interchange is a pioneering charity housed within the School of Law and Social Justice at the University of Liverpool. Over 20 years it has amassed knowledge and expertise on pedagogical approaches useful to Voluntary Community Organisations (VCOs) and beneficial to social science students. Interchange links students wanting to engage in social research with VCOs in Merseyside facing challenges and problems that require research evidence. In 21 years, Interchange has involved over 400 University of Liverpool students in 376 projects/students with around 270 collaborations with Voluntary and Community Organisations.

Case study:

Justice for Hillsborough families

Students from the Liverpool Law Clinic gave their time to analyse over 20,000 documents to support lawyers working on the Hillsborough inquests. The students' initial task was to sort through papers compiled by Anne Williams, who campaigned for 24 years to establish the truth about the death of her son, Kevin, at Hillsborough, aged just 15. Anne died shortly after the new inquests had been ordered, but as part of her legacy she left thousands of documents amassed during the years of her campaign. The Clinic sorted, catalogued, analysed and assessed the documents for relevance, duplication and legal professional privilege.

Clinic solicitor, Christine Ball, commended the students' approach. She said: "The students displayed considerable diligence and professionalism whilst undertaking this highly sensitive task. Their dedication enabled the legal team to comply with deadlines which would have been impossible to meet without the students' assistance."

The students went on to win a prestigious national prize at the LawWorks & Attorney General Student Awards 2014 for their work to support the lawyers working on the Hillsborough inquests.

The case, the longest jury case in British legal history, was successfully concluded on 26 April 2017.

Fundraising

The University has a proud history of fundraising to support pioneering medical research in the city. This includes securing £1.5 million from Matalan for Alder Hey Children's Charity; a £1 million donation for the Wolfson Centre for Personalised Medicine; £250,000 from the Garfield Weston Foundation towards a child health research institute and a major donation towards the Harris Wellbeing Pre-Term Birth Centre at Liverpool Women's Hospital.



Case study:

Alder Hey Children's Charity

Since 2013 we have been working with Alder Hey Children's Charity on a fundraising partnership that has raised more than £3.5 million in support of the new Institute in the Park, a research, education and innovation centre with a focus on improving children's health in Liverpool City Region, across England and internationally.

Clare White, Chief Executive of Alder Hey Children's Charity, said: "By working together, the University of Liverpool and Alder Hey have been able to demonstrate a shared vision and leadership in improving children's health that has helped us to reach many institutional and individual donors, whose generosity has made this project possible."

The University as a place maker

We take seriously our role in enhancing the cultural life of the city, offering unique events and exhibitions at the Victoria Gallery & Museum, and the Garstang museum, whilst working with our partners including Tate Liverpool to design exhibitions which showcase our innovative research.

Case study:

Tate Liverpool Partnership

Tate Liverpool has enjoyed a relationship with the University for many years on an informal basis, working with schools and departments within the University on a range of learning projects.

Building on this success, the two organisations formed a strategic partnership that has seen academics making a significant contribution to highly successful exhibitions, as well as the University engaging with the Tate Exchange programme and realising other benefits for students and staff. In 2017, the early successes of the partnership saw it nominated for a national impact award.

Andrea Nixon, Tate Liverpool Executive Director, said: "We're delighted to have formalised our relationship with the University of Liverpool. Not only do we look forward to working more with teaching departments, we are also thrilled to be building a direct relationship with students and welcoming them into our gallery."

Andrea Nixon, Tate Liverpool Executive Director

2,000

In 2015-16, the University saw around 2,000 people take part in its corporate public events programme

6,000

In 2016-17, the University's increased public engagement activity including Liverpool Literary Festival and the Open House festival saw an increase to more than 6,000 taking part in its corporate public events

Our University also acts as a lively hub for public debate across the Liverpool City Region. Through our a series of public lectures, debates, performances and other events we seek to engage a wide range of audiences in topics that they might not otherwise be able to access.

Our inaugural Literary Festival in 2016 brought new audiences, both to the University and the City.

Case study:

Liverpool's inaugural literary festival

The University hosted the inaugural Liverpool Literary Festival in October 2016. The festival included a series of public events providing the opportunity to enjoy readings by internationally celebrated writers, as well as exploring cultural issues and offering the chance to engage in lively debate.

The event attracted an array of well-known authors and poets, with a diverse programme offering something for everyone from the youngest of readers upwards. The University is now planning the next bi-annual festival to take place in October 2018, forming part of the tenth anniversary of Liverpool's year as European Capital of Culture.

6 LOOKING FORWARD: THE UNIVERSITY OF LIVERPOOL AT THE HEART OF THE LIVERPOOL CITY REGION

Our strategic ambitions match those of the Liverpool City Region

This report has provided a substantial amount of evidence that the University of Liverpool is a successful global organisation - but that we are also an anchor institution making a huge economic and social contribution to the Liverpool City Region. And we intend to do even more in future. Our strategic ambitions - to connect globally, innovate, increase social mobility and work in partnership – have a major impact upon the Liverpool City Region's performance and prospects. As do our expenditure, investment, infrastructure and people.

Our actions impact upon the Liverpool City Region

We provide work for many thousands in the Liverpool City Region through the money we, our students, suppliers and visitors spend. We train and educate people for the world of work. We increase the skill levels in our city region. We encourage innovation. We partner major organisations in ground breaking projects nationally and globally. We provide opportunities for social mobility for local people. Our staff and students are deeply engaged in the city's social and community life and contribute greatly to its cultural vitality. We have invested significantly in the future of the Liverpool City Region through the Knowledge Quarter. We have raised the international profile and reputation of the Liverpool City Region through our partnership working with organisations all over the globe. We increase Liverpool's diversity mix by attracting many thousands of staff and students from across the world. And as this report has clearly demonstrated, our economic contribution has been growing in recent years at a time when the Liverpool City Region and the country have faced big economic challenges. The University matters and contributes in good times – and challenging times.

The future opportunity is big

However, we will make an even greater contribution in future because the opportunity is growing. Government now recognises that city regions drive national economies - and that universities are key drivers of the economies of city regions. The Liverpool City Region has been given increased powers by government and an important new institution - an elected Mayor. We will help in the successful development of those institutions because the fate of the University and the Liverpool City Region are inter-connected. Each needs and wants the other to succeed. We can and will do well altogether.

Our commitment to the Liverpool City Region

Liverpool City Region has had considerable economic success in the past decade. To be even more successful in future it will need more: innovation, higher level skills, business start-ups, public-private partnerships, investment in infrastructure, global engagement, and leadership and delivery capacity. These reflect precisely the ambitions and strengths of the University of Liverpool. We are committed to using them for the benefit of the Liverpool City Region. We are proud of our role supporting investment in the Knowledge Quarter which has already led to an agreement to develop two major educational facilities with The Royal College of Physicians and a new home for Liverpool International College. We will continue to lead the public debate about the future development of the Liverpool City Region. We will put the intellectual and social capital of our people at the disposal of city regional leaders. We will continue to invest, educate, offer opportunity and remain open in a global world.

Liverpool has huge assets to build upon. With greater leadership, ambition and capacity it will develop them even further. The University is committed to make its contribution in all three areas. We remain ambitious to grow and develop, to innovate and to contribute to the Liverpool City Region. Our commitment for today and for the future matches and reinforces that made by the founders of the University.



Professor Michael Parkinson CBE
Associate Pro-Vice-Chancellor

7 OUR METHODOLOGY



METHODOLOGY FOR CALCULATING THE UNIVERSITY'S MULTIPLIER IMPACTS

Direct impact

Our estimate for the gross value added contribution to GDP generated by the University of Liverpool is the sum of its surplus and gross staff costs. This approach, the income method, is consistent with the principles of national accounting. Direct employment is the headcount of University staff, excluding non-payroll staff, such as contractors.

Direct labour taxes, including income tax, and employee and employer National Insurance contributions,, have been estimated using gross staff cost data from the University and HMRC data on tax allowances and receipts. Due to its charitable status, the University does not pay any corporation tax.

Indirect impact

The modelling for this study made use of Input-Output tables, as published by the ONS.[4] These data are the most detailed official record of the economic links between different parts of the UK economy, as well as with the rest of the world. Oxford Economics uses these tables to develop bespoke regional and sub-regional models to capture the local economic impact of the University.

Official employment data were used to adjust the I-O tables, to reflect the industrial structure and productive capacity of the Liverpool City Region. Our methodology utilises so-called 'Flegg-adjusted Location Quotients (FLQs)', which are consistent with the latest approaches and evidence in regional I-O modelling and regional science.

Oxford Economics' impact models quantify purchases along the entire length of the University's supply chain, and that of the consumer businesses supplying goods and services to students and visitors. The regional models estimate the extent to which these demands can be met in the Liverpool City Region, and the leakages in and out of the local area.

The transactions along the supply chains are translated into gross value added using North West specific ratios of value-added to gross output. The impact on employment was modelled using the latest data on output per head in the industrial sectors for the North West, derived from the Business Register Employment Survey (BRES), published by the ONS. Taxes were estimated using HMRC data on tax allowances and receipts, along with official statistics on average profitability of each UK sector, the average wage rates seen in these sectors (from the ONS' Annual Survey of Hours and Earnings), and the indirect employment supported within them.

Induced impact

The induced impact is modelled in a similar way. Using wage and postcode data supplied by the University, Oxford Economics used household spending data from the I-O tables to model the typical spending profile of University staff living in the Liverpool City Region, making allowances for 'leakages' of imports and savings.

For workers in the supply chains, we used industry-specific ratios of employee compensation per unit of output, sourced from the I-O tables, to forecast how much household wages are supported among suppliers' workers. Both spending streams were fed into our I-O models, to calculate the total impact of this spending. Taxes were calculated using the same methodology as for the indirect impact.

INTERNATIONAL STUDENTS' SUBSISTENCE SPENDING

The University of Liverpool attracts students to the Liverpool City Region from other parts of the UK, and the world, and keeps students previously resident in the locality who would have otherwise gone elsewhere. The subsistence spending of these students would not otherwise occur in the Liverpool City Region economy and therefore forms part of the overall impact of the University of Liverpool.

Subsistence expenditure refers to all student spending on goods and services except for tuition fees. It includes, for example, the purchases of items required for facilitating their study - such as transport to the University and required books - as well as other consumer expenditure, including on food, leisure, and social activities. Payments to the University for accommodation, food and other services are removed so as not to double count.

The former Department for Business, Innovation and Skills (now known as the Department for Business, Energy, and Industrial Strategy) regularly publishes data on subsistence expenditure by students in England and Wales. The latest available covered the 2011-12 academic year. This study focuses on home-domiciled students, however we follow BIS' assumption that international students spending is not significantly different to home students'. Students' expenditure in the survey is disaggregated into the following categories:

- living costs, including food, drink, and personal items;
- housing costs, including rent, mortgage costs, and Council Tax;
- participation costs, including books and stationery; and
- spending on children, if any.

Oxford Economics adjusted the average student spend using the Consumer Price Index to reflect the increase in living costs between 2011-12 and 2015-16. We further adjust the spending to reflect the difference lengths of academic years for undergraduate and postgraduate students, and the fact that international students likely go home less frequently than their UK equivalents. The BIS' student income and expenditure survey is based on an academic year of 39 weeks, while its methodology to value education exports assumes non-EU undergraduates spend 42 weeks at University, and postgraduate students 52 weeks.

Finally, we followed the methodology used in BIS's estimating the value of education exports paper to adjust for earnings of those who work in the Liverpool City Region alongside studying, which assumes half of part-time students work 20 hours per week. Spending funded by these wages cannot be considered 'additional' as the earnings originate from the Liverpool City Region. After these adjustments, the average student at the University of Liverpool spends £16,800 per year, including housing costs.

To calculate how much expenditure the University of Liverpool brings into the area, it is necessary to calculate the number of 'additional' students. To do so, Oxford Economics compared students' term time and home time locations. This allowed us to firstly identify how many students live in the Liverpool City Region, and how many of those are truly 'additional'.

Around 8,000 international students and 8,200 students from the rest of the UK lived in the region in 2015-16. A further 4,900 students from the Liverpool City Region lived in the area while studying, however their spending cannot be treated as 'additional' unless they would have left the area to go to other higher education institutions had they not attended the University of Liverpool. Using tracking data provided by the University, Oxford Economics estimates that approximately 4,400 of these students would have left to study elsewhere.

4 ONS, "United Kingdom Input-Output Analytical Tables, 2010", 7 December 2016.

VISITORS TO STUDENTS

The additional visitors the University attracts to the Liverpool City Region come from other parts of the UK and overseas. The spending profile of the two types of visitors—domestic and international—differs by their origin. Therefore, two methods are used to calculate their spending impact. Additionally, alternative spending profiles are used for Open Day attendees and graduation guests, depending on their origin.

Visitors from overseas

The ONS' International Passenger Survey (IPS) provides detailed data on the spending of international visitors to the UK and its nations and regions, disaggregated by nationality of the visitor. To estimate the spending of visitors to students, data on the spending of those visiting friends and relatives in the North West of England were used. The pattern of spending was taken from ONS data on the regional value of tourism.

University data indicate that, for instance, there were 370 additional students of Malaysian origin living in the Liverpool City Region in 2015-16. The 2015 Annual Population Survey (APS) data indicate that there were 4,000 people of Malaysian nationality living in the North West. Therefore, more than 9% of all spending by Malaysian visitors to the region is attributed to the University of Liverpool, and assumed to have been spent predominantly in the Liverpool City Region.

Applying this methodology to the University's 8,000 additional international students living in the Liverpool City Region indicates that visitors to these students spent an estimated £4.5 million in the area in 2015-16.

Domestic visitors

The University's home students also attract visitors to the Liverpool City Region. Although no information is available on how many visitors each additional student receives, data do exist on the average spend of a visitor from each part of the UK to friends and relatives in the North West of England. Using a similar approach to that employed for overseas students it is possible to estimate the spend of these visitors in the local area.

This study assumes that each student from outside the Liverpool City Region gets one visitor from their home region each year. With the likelihood that some students receive multiple family and friend visits during an academic year, and that parents are often involved in the transport of personal effects at the beginning and end of session, this is probably a very conservative assumption.

Following this approach, the 8,200 students from the rest of the UK living in the Liverpool City Region attracted visitors who spent over £1.5 million in the local area.

Graduation guests

The University of Liverpool hosted 16 graduations over seven days on its main campus in 2015-16, which were attended by 5,200 students. Using data from the University on the number of tickets allocated to each student, it was estimated that almost 12,700 guests also attended. Postcode data allowed calculation of the number of attendees from each region of the UK, and overseas.

The spend of international and domestic graduation attendees was calculated following similar methodologies to those used for visitors to current students. It was assumed that students from the North West of England and the surrounding counties spent one day in the local area, with students and their families from further afield staying a night or more. It is estimated that graduation attendees spent £1.1 million in the Liverpool City Region in 2015-16.

Open Day guests

There were four Open Days held at the University of Liverpool in 2015-16. Using data on registrations and postcodes from the University, it was estimated that more than 36,000 prospective students and their families attended one of these Open Days. People travelling from the North West and the surrounding counties were assumed to incur only a day's spending, while those from other regions and overseas were assumed to stay the night to attend.

Using the same data on spending by country and region from the IPS and the Great British Tourism Survey as for other visitors, Open Day attendees spent an estimated £1.3 million in the Liverpool City Region in 2015-16.

ABOUT OXFORD ECONOMICS

Oxford Economics was founded in 1981 as a commercial venture with Oxford University's business college to provide economic forecasting and modelling to UK companies and financial institutions expanding abroad. Since then, we have become one of the world's foremost independent global advisory firms, providing reports, forecasts and analytical tools on 200 countries, 100 industrial sectors and over 3,000 cities. Our best-of-class global economic and industry models and analytical tools give us an unparalleled ability to forecast external market trends and assess their economic, social and business impact.

Headquartered in Oxford, England, with regional centres in London, New York, and Singapore, Oxford Economics has more than 20 offices across the globe. We employ over 300 full-time staff, including 200 professional economists, industry experts and business editors—one of the largest teams of macroeconomists and thought leadership specialists. Our global team is highly skilled in a full range of research techniques and thought leadership capabilities, from econometric modelling, scenario framing, and economic impact analysis to market surveys, case studies, expert panels, and web analytics. Underpinning our in-house expertise is a contributor network of over 500 economists, analysts and journalists around the world.

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