

Unit-level environment template (REF5b)

Institution: Lancaster University
Unit of Assessment: 17 Business and Management Studies
1. Unit context and structure, research and impact strategy

1.1 Context

In September 1964, 296 undergraduates, 36 postgraduates and 10 academics came to Lancaster from across the UK to be ‘part of something new’ – a ground-breaking management school with two departments, Operational Research and Economics. Now quadruple-accredited and world-ranked, [Lancaster University Management School](#) (LUMS) is a vibrant international, diverse and enterprising community.

Sustaining our proud history of management learning and impactful SME collaboration, we push boundaries and defy conventions to deliver excellence (Table 1) through inclusive interdisciplinary research that engages with society’s Grand Challenges, such as *organisational performance & good work, productivity, and sustainability*.

Today, **187 FTE researchers** work across six Departments generating innovative insights and outputs that are cited the world over (Table 2). We collaborate with SMEs, family businesses, multinationals, NGOs and policymakers, to create local, regional, national and international impact.

Table 1: Evidence of Sustained Performance

Indicators	RAE 1996	RAE 2001	RAE 2008	REF 2014	REF 2021
Publications in world-leading journals	n/a	n/a	n/a	53	221
Peer-reviewed publications	598	755	1139	2934	3093
Peer-reviewed publications per capita	8.6	10.6	10	15.77	14.8
Citations per capita (Incites/SciVal)	8.3	28.6	39.9	66.6	82[†]
Research income (£m)	1.97	1.53	9.25	13.54	14.46
Engagement income (£m)				18	15.5
Engagement return (per £1)				18	28
PhDs awarded	56	95	154	169	225

[†] Includes 43 Early Career Researchers (ECRs)

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Table 2: Evidence of LUMS Research Impact: SciVal Citation Benchmarks 2014-2019 (updated 20/11/20)

SciVal Citation Count (Business Management & Accounting)	Scholarly Outputs	Citation Count	Citation per publication	Field-Weighted (FW) † Cite-Impact	Outputs in top 10 percentile (FW)	Outputs in top 10 percentile (no FW)
LUMS	1544	17999	11.1	2.06	24.7	381
City	1134	13692	12.1	1.98	22.7	257
Imperial	899	15024	16.7	2.64	29.0	261
LBS	704	9237	13.1	1.73	19.2	135
LSE	1469	14128	9.6	1.77	21.3	313
UCL	1572	12043	7.7	1.62	19.5	307
Bath	954	11651	12.2	2.05	24.7	236
Cambridge	1757	21011	12	2.07	22.8	401
Oxford	1859	16965	9.1	1.95	22.4	416
Warwick	1679	20844	12.4	2.25	25.1	422
Totals/Averages	1357	15259	11.6	2.01	23.14	313

† Field-Weighted Citation Impact. 1.00 indicates publications are cited at world average for similar publications.

As signatories to the Civic Universities Charter, LUMS continues to invest in extending the impact and reach of our research, using the [AREA framework](#) to guide Responsible Research and Innovation (RRI):

- ***Anticipating*** change by understanding opportunities for impact via Impact Accelerator Account funding activities (**£92k**);
- ***Reflecting*** on the purposes and implications of research in interdisciplinary collaborations through School and University Research Centres and Institutes.
- ***Engaging*** with diverse stakeholder communities via our Engagement Team (**£276k pa**);
- ***Acting*** to connect non-academic communities with the research process, via new Media and Communications support and central Lancaster University Press Office (**£95k pa**).

Our investments supported researchers to secure **£14.46m** research income and **£15.5m** engagement funding during REF2021.

1.2 Strategy 2014 – 2020

In REF2014, we outlined our strategic vision and culture, prioritising four key objectives to 2020:

- ***Aim Higher.*** We set an ambitious target of 80% of staff consistently producing research at level 3 and above; *according to our internal peer review process, we achieved 94%. Table 1 and Section 1.3.2 provide further evidence.*
- ***Support ECR Development.*** *We expanded support by introducing three-year mentoring, reformed probation and review processes, and discipline-specific, career-level performance profiles. Fifty-five lecturers were promoted to Senior Lecturer, and 24 Senior Lecturers to Professor (see Section 2)*
- ***Double EU Funding.*** *EU funding trebled from £755k to £2.318m (see Section 3).*
- ***Develop International Research Networks.*** *We pursued collaborations with top-100 universities e.g. [MIT REAP](#) and [OPTIFRAME](#), with MIT; and [Responsible AI for Labour Market Equality](#), with McGill and Toronto on Advisory Board (see Section 4).*

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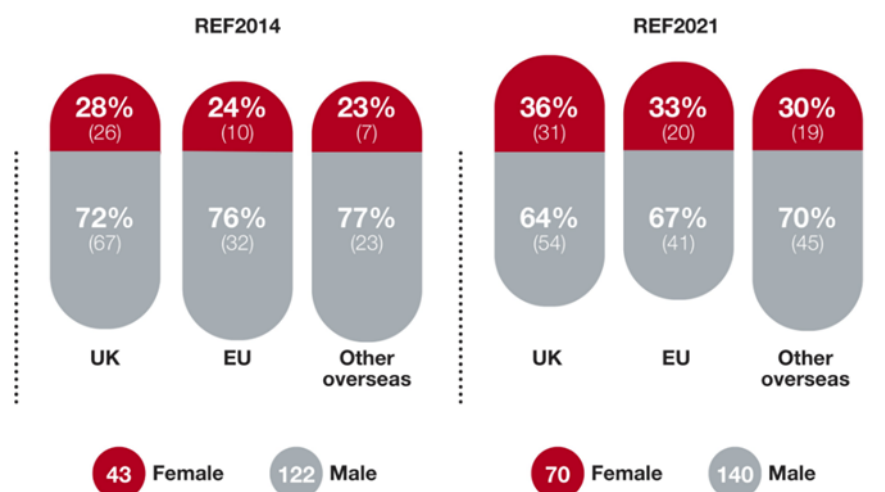
Our strategy and achievements position LUMS as a leading internationally oriented Management School, built upon long-established bodies of expertise and an **open and inclusive research environment** that prioritises equality, diversity and respect (Table 3).

Table 3. Evidence of Vibrant Research Community

Indicators	REF 2014	REF 2021
Editorial roles, including editorial board membership, with leading journals (Editor or Associate Editor positions)	111 (57)	338 (115)
Keynote presentations at leading conferences/research workshop	120	117
Research seminars hosted in LUMS (with Visiting International Scholars)	625 (200)	647 (362)
Sabbaticals taken in REF2021 (in person months)	562.5	782

Our **equality** ambitions and staffing strategy (Section 2), enabled us to almost double international research staff numbers (from 72 to 125, Figure 1). We continue to grow diversity; in 2020, the LUMS Leadership Team is gender balanced.

Figure 1. Faculty International Diversity by Region and Gender
(Snapshot 4th January 2021)



Our **Open Access** practices (Section 2) and the University's [Code of Practice](#) underpins good governance, ensuring all our research respects the dignity, rights, and welfare of participants, researchers and third parties.

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1.3 Structure

LUMS researchers work across eight interdisciplinary Research Centres and six Departments. We also work closely with the Work Foundation ([WF](#)), the new Health Innovation Campus ([HIC](#)) and the four University-wide Research Institutes (Figure 2).

Situated in the heart of London and an integral part of LUMS, the [WF](#) transforms people's experience of work and the labour market. In REF2021 the WF was awarded more than **£4.36m** in funding and delivered **177** commissioned projects, working with **28** researchers engaged with employers, policymakers and practitioners.

The [HIC](#) is a new, **£41m**, cross-University platform engaging our economic, organisation and marketing scholars in research and outreach projects that transform the provision and mobilisation of care, develop supporting technologies and inform health economies.

Figure 2. LUMS Research Structure



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1.3.1 Interdisciplinary Research Centres

LUMS' interdisciplinary Research Centres represent a substantial body of knowledge, synthesising disciplinary expertise. Centres are instrumental in developing a focused, vibrant research ecosystem, supporting virtuous circles of external relationships, funded research and engagement activities. Centres engage with practice and policy-driven *Grand Challenges: Economic Growth* ([Financial Econometrics, Asset Markets and Macroeconomic Policy \[FEAMMP\]](#)); *Productivity and Innovation* ([Productivity](#); [Family Business](#)); *Climate Change and Sustainability* ([Pentland](#)), *Data and Digital Transformations* ([Technological Futures](#)); *Mobility* ([Transport and Logistics](#)); and *Market Behaviour and Demand* ([Consumption Insights; Market Analytics and Forecasting](#)).

Research Centres capitalise on departmental expertise, expanding our twenty-year management learning legacy in SME and supply chain transformation. Working across the Departments, Centres generate in-depth understanding of development needs, enabling us to respond quickly to three types of opportunity.

First, Centres connect research expertise to funders' priority areas, acting as vehicles for interdisciplinary funding bids and high-impact research (Table 4).

Table 4. Examples of Funding

Funding Body and Project	£s
Productivity	
EU Horizon 2020 'I AM RRI' Additive Manufacturing (15 international partners); Spring, Sutanto D.	£172k
Norwegian Research Council Measures for improved availability of Medicines and Vaccines'; Selviaridis	£150k
Transport & Logistics (CENTRAL)	
EPSRC 'RESPOND-OR'; Zografos, Sutanto J.	£510k
EPSRC 'OR-MASTER'; Zografos	£2.3m
Technological Futures	
EU Horizon 2020 'Mobile-Age'; Hayes, Introna	£710k
DCSM: 5G Rural Integrated Testbed; Mason	£249k

Second, Centres deliver civic engagement, working through the challenges faced by business, policymakers and wider society to co-produce solutions through collaborative management learning (Table 5). For example, CENTRAL is managing a six-year **£2.3m** EPSRC Programme Grant on Airport Capacity Management. The Pentland Centre for Sustainable Business was launched with an initial **£500k** five-year grant from The Rubin Family Foundation, with a **£625k** five-year renewal in 2020. It organises open and company-based events bringing non-academic audiences into dialogue with LUMS academics. The Work Foundation hosts many Centre events across the UK, drawing on extensive business and policymaking networks to extend reach.

Third, Centres originate, nurture and sustain long-term and impactful relationships with strategic partners. For example, the Centre for Productivity promotes and matures links with government departments including the Department for Business, Energy and Industrial Strategy (BEIS) (**Garner, Spring**). FEAMMP supports links with HM Treasury (**Walker**) and works with Invesco Quantitative Strategy, Timberlake Consultants, ECB, the Bank of Greece, the Bank of England, the Association of EU Fiscal Councils, and the Federal Reserve Bank. CENTRAL works with the International Air Transport Association, London Heathrow and Gatwick Airport, the National Air

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Traffic Service, Athens International Airport, Eurocontrol, and others; Research Centre activities contributed to our REF2021 Impact Cases Studies.

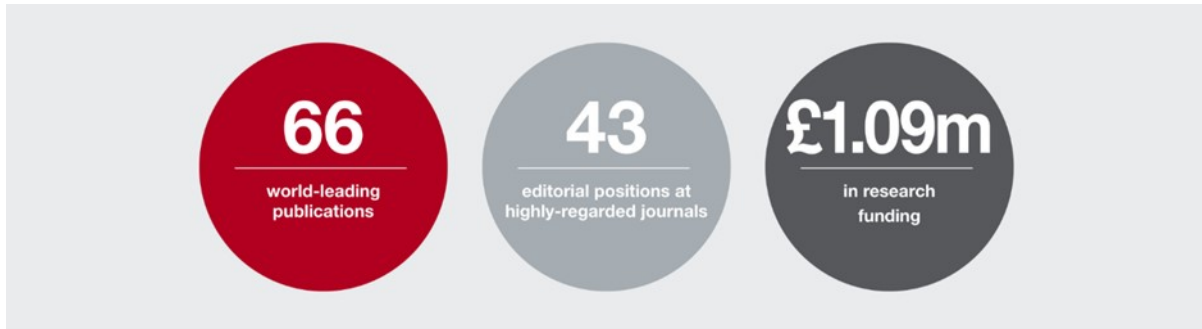
Table 5. Examples of Engagement Events

Events	Partners & Organisations Engaged
Productivity	
Productivity Connections Workshop Series (May/June/July 2018)	Northwest Business Leadership Team, Work Foundation, 23 SMEs. Cisco UK, BEIS, OECD, TUC, CBI. 20-50 organisations attended each event.
The Outside View: Innovation Networks (February 2018)	Cabinet Office Open Innovation Team and HM Treasury: 20 policymakers and officials
Industrial Strategy and the Future of Manufacturing in the UK (September 2018)	Work Foundation: 54 organisations and policymakers represented.
CMAF	
Improving Forecasting in Your Organisations (on-going)	Bespoke events with Beiersdorf; 300 participants to date.
Improving forecast quality in practice (Dec. 2014)	Open Event, 40 organisations
Forecast Performance Measurement & Value Added (March 2017)	Open Event, 147 organisations
Technological Futures	
Mobile-Age public demonstration of digital apps developed to connect elderly people to valued services and communities (March 2017; April 2018)	Campus in the City event designed to engage public in Lancaster City Centre
Artificial Intelligence and the Future of Work (September 2018)	Work Foundation, Cisco, OECD, British Telecom, Cabinet Office, TUC, c.50 participants from Industry, Government, Unions, EU, Academics
Making Policy Impacts	IBM, OECD, Brookings
Pentland	
Sustainability: Why it Matters & How We Think about It (March 2017)	Nestlé
Climate risks disclosure consultancy – helped Nestlé develop novel TCFD reporting (Dec 2018; July 2020)	Nestlé
Arctic Basecamp Davos, raising business climate change awareness (Annually January 2017- 2020)	World Economic Forum; World Business Council for Sustainable Development; World Resources Institute

Unit-level environment template (REF5b)**1.3.2 Disciplinary Excellence in Departments**

Interdisciplinary excellence is grounded in discipline-based Departments with long-standing reputations for producing significant research. Departments facilitate lone scholarship and peer community collaboration, mentoring and supporting individual researchers throughout their careers to help them become leaders in their fields. Departments use Quality Research funding to strengthen research in new and emerging disciplinary areas, maintain interdisciplinary national and international priority programmes, and grow research talent and strategic partnerships.

Accounting & Finance (ACF)



[ACF](#) influences academic communities, industry and governmental policy across four research themes: *Bank Accounting & Regulation*; *Banking & Corporate Finance*; *Corporate Governance & Auditing*; *Asset Pricing & Financial Econometrics*. A vibrant PhD programme supports visits to leading US departments (Duke, Michigan, Columbia) and places graduates in faculty roles at high-ranked schools (Bocconi, Cass, Monash). Researchers lead FEAMMP (**Nolte**) and the European Banking Center (**Ioannidou**).

Table 6: Academic excellence in ACF

FTE staff	40.09	Peer-reviewed articles	240
World-leading publications[†]	66 (28%)	Including: <i>Accounting, Organizations and Society</i> , <i>Journal of Accounting Research</i> , <i>Review of Financial Studies</i> , <i>Review of Accounting Studies</i> , <i>Journal of Financial Economics</i> , and <i>Management Science</i> , <i>The Accounting Review</i> , <i>Journal of Accounting and Economics</i>	
Research funding	£1.09m	Including: ESRC, Leverhulme Trust, ICAEW	
Events Organised	Conferences/workshops: 24		Seminars: 140
Distinguished visitors	Hribar (Iowa); Myers (Tennessee); Shakespeare (Michigan); Andersen (Northwestern); Cornelli (London Business School); Masulis (UNSW); Zechner (WU, Vienna)		
International standing	<i>British Accounting and Finance Association</i> Distinguished Academic Award winners (Peasnell 1995; Unerman 2016); prestigious fellowships (Ioannidou , <i>CEPR</i> ; Unerman , <i>Academy of Social Sciences</i>), and advisory positions (Ioannidou , <i>Financial Stability Board Academic Advisor</i> ; Unerman and Young , <i>ICAEW Research Advisory Board</i> ; Peasnell , <i>Financial Reporting Council Academic Panel</i> ; Unerman , <i>Prince of Wales's Accounting for Sustainability Project Expert Panel</i>)		
Engagement	Close links and advisory positions to: CEPR, Bank of England, Bank of International Settlements, European Central Bank, Financial Stability Board, International Monetary Fund, World Bank.		

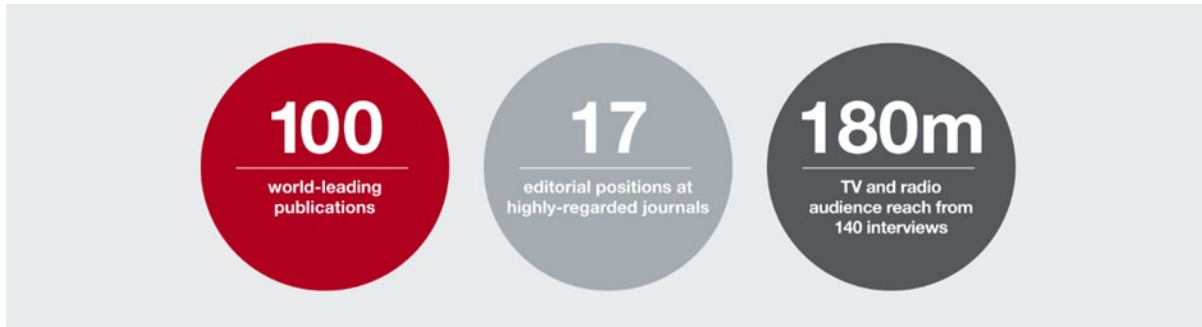
[†] Judged by peer review (Tables 6-11).

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Examples of expertise:

- The Financial Conduct Authority uses **Young's** research on textual analysis of companies' annual reports to improve detection of financial reporting irregularities in its market monitoring. **Young's** team's methods enabled one of the world's largest asset managers, handling more than £300bn from 2.4m clients, to develop investment tools.
- **Ioannidou** was appointed as Academic Advisor for the international Financial Stability Board's (FSB) evaluation of [too-big-to-fail \(TBTF\) reforms](#) for systemically important banks. These reforms have been implemented in FSB jurisdictions over the past decade. **Novotny-Farkas, O'Hanlon** and **Hashim's** insights contributed to two commissioned reports to the European Parliament's endorsement process for IFRS 9 Financial Instruments.
- **Hong, Martin-Utrera, Nolte I&S, Shackleton, Vikas** and **Wang G's** insights into portfolio optimisation, asset pricing dynamics, volatility modelling, high-frequency financial econometrics, individual trading behaviour, mutual funds and real estate resulted in the ESRC-FWF "Order Book Foundations of Price Risks and Liquidity". The work has impacted the Financial Conduct Authority, the Bank of England and the US Securities and Exchange Commission.

Economics



[Economics](#) nurtures a widening international network across five research themes: *Behavioural and Experimental Economics*; *Education, Labour and Health Economics*; *Industrial Organisation and Economic Theory*; *Macroeconomics and Financial Markets*; and *Political Economy, Development, and International Trade*. Economics launched the Andrews and Brunner Lectures, with two Nobel Prize winners, and organise the annual International Workshop on Applied Economics of Education and the annual Lancaster Game Theory Conference. They hosted two North West Social Science Doctoral Training Partnership (NWSSDTP) PhD Conferences, created the *NWSSDTP Summer School*, and achieved **24** ESRC scholarships and CASE Awards with industrial partners (e.g., The Bank of England).

Table 7: Academic Excellence in Economics

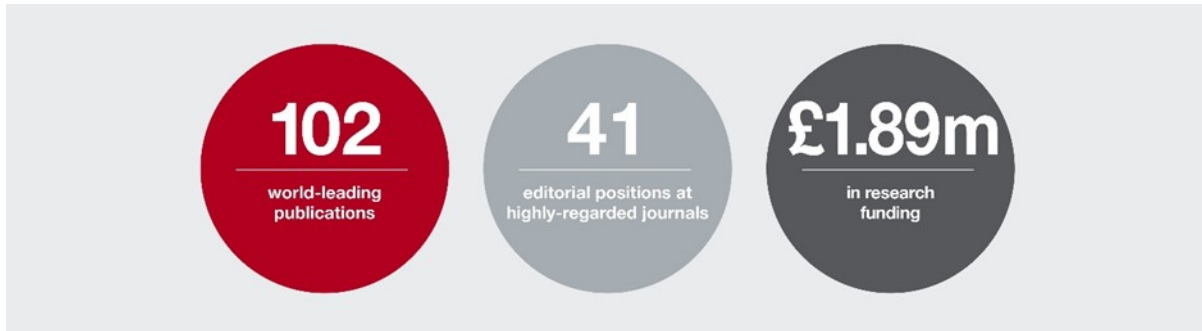
FTE staff	37.9	Peer-reviewed articles	538
World-leading publications	100 (19%)	Including: <i>American Economic Review</i> , <i>Econometrica</i> , <i>Review of Economic Studies</i> , <i>American Journal of Political Science</i> , <i>Journal of Politics</i> , and <i>Nature</i> .	
Research funding	£890k	Including: ESRC, Leverhulme Trust, Nuffield Foundation, UK Govt Depts of Education & DFID, UN	
Events	Workshops: 24 Seminars: 236 (111 international speakers)		
Distinguished visitors	McComb (Texas Tech Office of Economic Development), Hansen (Wisconsin-Madison), Bingley (SFI), Morley (Sydney), Porter (Northwestern), Tong Li (Vanderbilt), Kastl (Princeton) and Nobel Prize winners Roth (Stanford) & Smith (Chapman).		
International standing	Johnes (founding editor, 1993) and Bradley (succeeding editor) made <i>Education Economics</i> the leading journal in its field. Zanardi , Co-Director of the European Trade Study Group (ETSG) and European Parliament advisor for the Trade Remedies Investigations Directorate. Walker , Director of Education Economics Research at IZA, Bonn. Tsionas , Board of the Greek Fiscal Policy Council. Peel , in top 2% most-cited economists (RePEc), Winter , International Game Theory Society, council member, and Fellow, Economic Theory Society		
Engagement	Researchers work with policymakers, including: DfE, BEIS, Cabinet Office, DFID, the United Nations' University (UNU-WIDER), Bank of England, Federal Reserve Bank of Dallas and the World Bank. Annual Lancaster Workshop on Macroeconomic and Financial Time Series Analysis involves European and US central bank officials.		

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Examples of expertise:

- The UK and Israeli governments called on **Winter's** Game Theory insights (*Mental equilibrium and strategic emotions* and *Rule Rationality [Management Science]*), when considering Covid-19 exit strategies.
- **Walker** led research for the UK Department of Business, Innovation and Skills (BIS, now BEIS) and Department for Education on Higher Education, earnings and the cap on student numbers. His was the only work cited by HM Treasury to support the removal of the UK undergraduate numbers cap.
- The LUMS Housing Observatory provide publicly available housing market indicators, and analysis that monitors real-time risks and stability (**Paya, Pavlidis, Peel**). They collaborate with the Bank of England and the Federal Reserve Bank of Dallas.

Entrepreneurship & Strategy (ENST)



[ENST](#) formed in 2019, bringing together scholars from *Entrepreneurship, Strategy, Leadership, Management Learning* and *Innovation*. Research themes in responsible management include: *Individual and Organisational Transformation; Collaborative Development; and Managing Across Boundaries*. Researchers engage with SMEs and large organisations, developing research and management learning programmes that deliver research-led impact and address real-world challenges.

Table 8: Academic Excellence in ENST

FTE staff	23.37	Peer-reviewed articles	514
World-leading publications	102 (20%)	Including: <i>Academy of Management Journal, Strategic Management Journal, and Entrepreneurship Theory & Practice</i> .	
Research funding	£1.89m	Including: ESRC, Leverhulme Trust, BA, GCRF, Horizon 2020	
Events	Writing Retreats: 18		Seminars: 82
Distinguished visitors	59 visiting international scholars.		
International standing	24 invited international conference Key Notes; Chair, Academy of Management Entrepreneurship Division (Jack); Chair, British Academy of Management (Mason); distinguished member, Latin American Research task group for IFERA (Discua-Cruz).		
Engagement	Collaborations include: UK Cabinet Office, Ernst & Young, Sellafield, Siemens, Stevenage BioScience Catalyst and more than 200 SMEs. 61 Entrepreneurs in Residence (EiR) facilitate engaged teaching and research; leading Global Business Schools Network initiative to build global EiR network.		

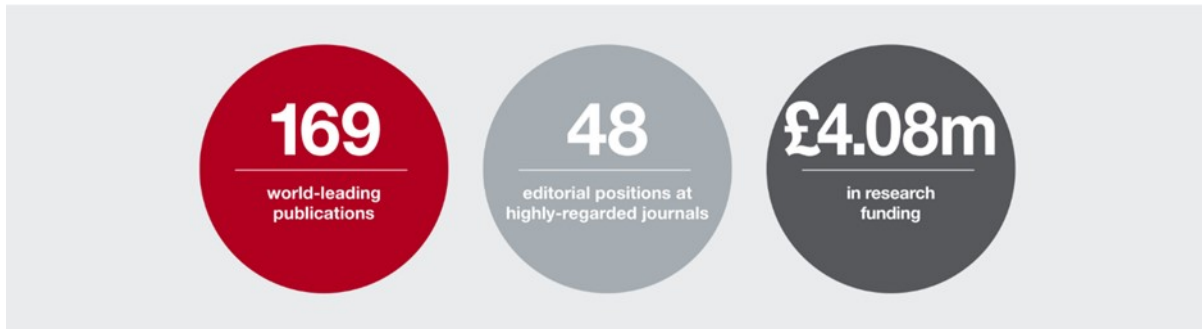
Examples of expertise:

- **Campopiano's** insights into innovation in family firms through the Centre for Family Business (with **Dada, Discua Cruz, De Massis**) and **Iszatt-White & Kempster's** research on Authentic Leadership inform management learning programmes (ERDF Cumbria Forum, Productivity through People, Made Smarter), helping SMEs improve management practice and increase productivity.

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- **Stead's** research through the Academy for Gender, Work and Leadership into women's leadership representations led to a **£509k** H2020 grant to establish an EDI Observatory, in collaboration with Athens University of Economics and Business (with **Alkhaled, Leitch**), focusing on business school gender issues.
- **Bauer's** M&A research (*Strategic Management Journal*, c.400 citations), forms part of ongoing M&A and strategy research programmes supported by collaborations with EY, AL-KO and Siemens (with **Demir, Friesl, Raswant, Strobl**).

Management Science (ManSci)



[ManSci](#) research activities focus on five themes: *Optimisation; Transport & Logistics; Marketing Analytics and Forecasting; Supply Chain Management; and Information Systems*. ManSci is an international centre of excellence in ECR development, nurturing talent through the NATCOR Taught Course Centre; the [STOR-i Doctoral Training Centre](#) (Section 2) and CENTRAL's involvement with [CREST-OR](#) to train South-East Asia ECRs. ManSci leads three LUMS research centres: CENTRAL (**Zografos**), CMAF (**Fildes**) and Productivity (**Spring**). The [Rothkopf Rankings](#) rate Lancaster 6th in the world (outside the US) for contributions to Operational Research practice during the past 50 years.

Table 9: Academic Excellence in ManSci

FTE staff	34.37	Peer-reviewed articles	898
World-leading publications	169 (19%)	Including: <i>Journal of Operations Management, MIS Quarterly</i> and <i>Operations Research</i>	
Research funding	£4.08m	Including: EPSRC, ESRC, H2020, Leverhulme Trust, BA	
Events	Workshops: 43	Seminars: 92 , (58 international speakers)	
Distinguished visitors	53 international visiting scholars, including Odoni (MIT),		
International standing	48 editorial roles at highly-regarded journals, including <i>Information Systems Research, Journal of the AIS, Journal of Operations Management, Management Science</i> and <i>Operations Research</i> . Boylan , NATCOR Director, International Society for Inventory Research past president; Eglese , European Association of OR Societies past president; Ehrgott , International Society on Multicriteria Decision Making past president; Glazebrook , EPSRC Mathematical Sciences Strategic Advisory Team member; Hendry and Spring , Board of EUROMA; Zografos , EPSRC Mathematical Sciences Strategic Advisory Team, Transportation Research Board (USA).		
Engagement	Doctoral projects part-funded by industry (19), industry-led masters' projects (322), CMAF-run executive training programme and practitioner workshops. <i>R, Python</i> and <i>Julia</i> packages made open access. Hosted 60 th OR Society Conference; International Forecasting Symposium.		

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Examples of expertise:

- Logistics, energy, telecommunications, healthcare organisations use insights into discrete, stochastic dynamic and multi-objective optimisation (**Letchford, Dokka, Glazebrook, Ehrgott, Jacko**) produced in collaboration with STOR-i, CENTRAL and the [Data Science Institute](#). For example, **Ehrgott**'s work is being used to optimise radiography treatments.
- Supply chain management research revealed how Service Triads, institutional complexity and sustainability, shape cooperation and competition between firms (**Spring, Hendry, Stevenson, Hughes, Selviaridis**). This informed NHS and public procurement policy, and organisational practice at engineering firms and SMEs.
- Insights into social sharing technologies and information-rich environments (**Sutanto J**) informed the 'Connected Communities' and London's Smart Parks initiative as part of London's designation as the world's first National Park City; it has also been applied in the Lake District National Park.

Marketing



Grounded in critical scholarship, [Marketing](#) promotes three research themes: *Health, Wellbeing & Vulnerabilities*; *Sustainability & Social Justice*; *Globalisation & Innovation*. Marketing's research featured in *Harvard Business Review*, *The Times*, and *Wall Street Journal* (**Puntoni**); *The Times*, *New Scientist*, and *Sky News* (**Gilchrist**). **Hopkinson** and **Malone** have discussed research on *BBC Radio 4* and *Five Live*. **Downs'** research reached 16m-plus in print and online; departmental interviews across TV and radio reached 150m-plus. ECRs and **26** PhDs are integral to developing world-leading publications, and benefit from all-staff writing retreats. Marketing leads the Centre for Consumer Insights (**Piacentini**).

Table 10: Academic Excellence in Marketing

FTE staff	26.45	Peer-reviewed articles	304
World-leading publications	47(15.4%)	Including: <i>Journal of Consumer Research</i> , <i>Journal of Consumer Psychology</i> , <i>Marketing Science</i> and <i>Journal of Marketing Research</i> , <i>Journal of International Business Studies</i> , <i>Organization Studies</i> , <i>Human Relations</i> , <i>Sociology</i> , and <i>Sociology of Health and Illness</i>	
Research funding	£338k	Including: Big Lottery Fund, European Commission, British Academy, Marketing Trust	
Events	Workshops/Conferences: 14		Seminars: 25
Distinguished visitors	4 - Fischer (York University, Canada), Lowry (HEC, Paris), Askegaard (Southern Denmark), Schledelmilch (WU, Vienna).		
International standing	20 editorial positions at highly-regarded journals, including <i>Journal of Consumer Research</i> , <i>European Journal of Marketing</i> , and <i>Industrial Marketing Management</i> . Piacentini - Transformative Research Group and Academy of Marketing Consumer Research with Societal Impact SIG co-chair; Puntoni - Marketing Science Institute; and Cronin - British Academy of Management Doctoral Symposium.		
Engagement	87 international, national and regional TV and radio interviews, reaching 150m .		

Examples of expertise:

- Building on insights into the treatment of people with a disability in the marketplace (*Journal of Consumer Research*), **Higgins** promoted social change through [art exhibitions](#) to increase awareness of their inclusion and to transform consumer lives.

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- **Downs'** insights into the gambling industry and problem gamblers have seen her serve on the Gambling Commission advisory body on the structure of the UK Prevalence study, and provide invited evidence to the [Lords Select Committee on the Social and Economic Impact of the Gambling Industry](#).
- The American Marketing Association recognised **Patterson's** research into service ecosystems and innovative food waste reduction with their inaugural AMA-EBSCO Annual Award for Responsible Research. [The awards](#) recognise "outstanding research that produces credible and useful knowledge that can be applied to benefit society".

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Organisation, Work & Technology (OWT)



[OWT](#) is organised around five key research themes: *Human Resource Management and Employment Relations; Ethics, Sustainability and Management; Management, Organisations & Society; Critical Leadership; Gender & Diversity; and Technology & Society*. OWT is world-leading for *critical interdisciplinary research*; with interdisciplinary appointments (**Hemming**, Philosophy; **Deville**, Sociology) and publications (**40%** of outputs in interdisciplinary journals). OWT leads the Centre for Technological Futures (**Vurdubakis**).

Table 11: Academic Excellence in OWT

FTE staff	24.11	Peer-reviewed articles	294
World-leading publications	54 (18%)	Including: <i>Organisation Studies, Human Relations, Journal of Economic Geography, Journal of Management Studies and Marketing Theory, MIS Quarterly, Equality, Diversity and Inclusion</i> .	
Research funding	£2.11m	Including: ESRC, EU H2020, Research England	
Events	Writing Retreats: 13		Seminars: 73
Distinguished visitors	24 visiting international scholars, including: Australia (Riach) and the USA (Cort, Rasch)		
International standing	29 editorial positions at highly-regarded journals, 22 roles on editorial boards. Four founding editors: Knights , <i>Gender, Work and Organisation</i> ; Collinson , <i>Leadership</i> ; Sparrow , <i>Journal of Organizational Effectiveness</i> ; Introna , <i>Ethics and Information Technology</i> .		
Engagement	<i>Mobile Age</i> (Hayes & Introna ; with Social Futures Institute) work with MEPs, local government, national charities and care homeowners. Work on electrical waste and circular economy (Stowell ; with Materials Science Institute).		

Examples of expertise:

- **Faulconbridge** working with legal and accounting services SMEs across the UK (and **Spring**, ManSci) co-develops insights into the implementation effects of [AI on Next Generation Professional Services](#), as part of a £91k funded project.

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- **Dale** and **Bloomfield**'s findings on the consequences of the growing use of performance enhancing drugs in the workplace resulted in two commissioned reports for the EU Agency for Safety and Health at Work (EU-OSHA). They held discussions with EU-OSHA and the EU Drugs Monitoring Agency on incorporating specific questions on the use of enhancement drugs into the large-scale, Europe-wide drugs surveys which the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) administers.
- **Stowell**'s interdisciplinary explorations of e-waste and the circular economy provide practical applications through the REPIC Ltd-funded '*UK Electrical and Electronic Equipment and Waste of Electrical and Electronic Equipment Study*' presented to Defra. **Stowell** contributed to UK '[Recycle Your Electricals Campaign](#)' and the UK Environmental Audit Committee 'Electronic Waste and the Circular Economy'. **Stowell, Whiteman** and **Liu**'s active Pentland Centre roles contributed to **£1.73m** in research grants.

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1.4 LUMS 2027 Research and Impact Strategy

Through our disciplinary strengths and interdisciplinary centre communities, we continue to pursue our strategic ambitions to be world-leading in generating outstanding research insights that transform lives, communities, organisations, practices and thinking globally. To achieve this we prioritise the following objectives:

- i) **Position LUMS as a leading Civic Management School.** We will embed RRI principles and EDI best practice in research engagements with collaborators, stakeholders and publics, generating an inclusive approach to research agenda development and delivery. Our ambition is to deliver research projects with significant civic impact.
- ii) **Push the boundaries of Research Excellence.** We will shape and deliver world-leading programmes of research by targeting investments in the emerging disciplinary and interdisciplinary strengths of our Departments and Centres. To deliver this we will provide active career development support, mentoring, individual goals, seedcorn funding and incentives to promote long-term career progression. Our ambitious target is to have 60% of ECRs delivering research at Level 4.
- iii) **Put Impact & Engagement at the heart of research.** We will support senior researchers in leading big, bold research bids with impact at their core. We will develop agile teams comprising interdisciplinary researchers, research and engagement professionals and external stakeholders to collaborate on our impactful, future-critical research agenda. Our ambition is to grow engagement-focused activity income by 20%.
- iv) **Invest in Impact Evaluation & Development Practices.** We will work across REF, TEF, KEF and HEBCIS requirements to identify and adopt evaluation best practice and use this to generate opportunities that extend the reach and significance of our most impactful research. We will bring together experienced researchers and ECRs, research and engagement professionals, and key external stakeholders to increase external engagement by 20%.
- v) **Diversify & Grow Research Funding sources.** We will invest in professional and academic expertise and work closely with LU Research Institutes to develop *Grand Challenge* bids that take advantage of interdisciplinary research funding opportunities. 'Strategic buyouts' will enable key faculty to lead such bids. Our ambition is to diversify our research funding base by 20%.

This strategy underpins [Lancaster University's strategic goal](#): *to be a 'go to' university for research and teaching that transforms lives, communities, practices and thinking in countries across the globe.*

In spite of the Covid-19 pandemic, our community has remained active and resilient, and we are confident that our long-term future strategic plans are achievable.

2. People



2.1 Staffing strategy and development

LUMS is an exceptional place to work. Our collegiate and vital research-led environment provides staff development support and reward to all **187** (FTE) Category A *Teaching & Research* faculty members. To push the boundaries of research excellence with impact and engagement at its heart, we have put in place the *ACE* staffing strategy: *Attracting top talent*; *Creating communities of excellence*; and *Establishing supportive structures*. This strategy attracts and retains diverse, world-class international talent at all levels of seniority, and actively supports researchers throughout their careers as individuals and as members of agile teams working to address Grand Challenges.

Attracting top talent

LUMS employs *innovative recruitment practices* which promote equal opportunities while increasing success rates in the fiercely competitive international research labour market. We do this through:

- Seeking out and recruiting individuals who complement **established research teams**, helping LUMS extend its critical mass in strategically important areas, and contributing to our collegiate culture, e.g.: **Goncharov** (Prof), **Hwan Ahn** and **Kroechert** (ECRs) (Financial Reporting group, ACF); **Bauer** (Prof) and **Strobl** (ERC) (Mergers & Acquisitions group, ENST); **Higgins** and **Skandalis** (Consumer Behaviour group, Marketing).
- **Grand Challenge recruitment** in priority areas, where governments and international agencies recognise problems as complex, persistent, and requiring interdisciplinary approaches. E.g., **Nolte**, **Winter** (Profs), **Bia** and **Soccorsi** (ECRs) for [Macroeconomy & Clean Growth](#); **Hughes**, **Tsionas** (Profs), **Fan**, **Elraz** and **Ford** (ECRs) for *Productivity*; **Ehrgott**, **Sutanto**, **Lulli** (Profs), **Boyaci**, **Dokka**, **Morgan** and **Shone** (ECRs) for [Mobility](#); and **Unerman** (Prof), with **Bebbington** (Prof) (from February 2021), **Liu**, **Stowell** and **Wang D** (ECRs) for *Sustainability* fostering links with the [Pentland Centre](#).
- The **Anniversary Lecturer (AL) scheme** is a University-wide scheme to recruit high-flying ECRs. We appoint ALs on five-year contracts comprising 100% research in the first two years, tapering to a minimum of 40% research by year five. LUMS appointed **8** ALs, including joint appointments between OWT and Sociology (**Deville**), Marketing and Psychology (**Tarim**), and Economics and Health Research (**Bertelli**). Together they have published 24 papers in highly-regarded journals.

Unit-level environment template (REF5b)

- **Grade 6 (Development Lecturer) posts** serve as a bridge between PhD completion and full faculty roles (**Boyallian, Danisewicz, Hashim, Kagkadis, Liang, Moreno, Morgan, Stowell**) and comprise 50% research, 50% light teaching-related duties (tutorials and grading). Clear, objective performance conditions support progression to Grade 7.
- **Grade 5, 5-year fixed-term (Early Career Academic) posts** support PhD recruitment in areas where the supply of top talent is scarce. These innovative posts pay a competitive graduate salary, attracting promising doctoral candidates (e.g., **Vasilas, Kanlis**) as full-time staff members with part-time PhD registration. PhD training is 100% in year 1, tapering to 50% in year 5. Individuals receive [Post Graduate Certificate of Academic Practice](#) training. Teaching-related duties are limited to marking, tutorials, and guest lectures.
- **Premium pay arrangements** operate for disciplines facing acute market scarcity, such as Accounting and Finance. The *premium* enables LUMS to compete in the international labour market where pay levels at top European, Asian and US Business Schools typically exceed UK norms.
- **Diversity** is central to our recruitment and succession planning. Our retention success means that 14% of faculty are aged 60+. We are growing community diversity and ECR development to ensure a rich pipeline of new talent. EDI and unconscious bias training, vacancy advertisement & specification vetting, relocation and visa help have aided recruitment. Our recruitment is now 50% female (35% in REF2014), and our international staff recruitment has increased to 61%.

Creating communities of excellence

LUMS creates collegiate, inclusive and EDI-sensitive Communities of Excellence. Through these, we ensure the provision of research development opportunities that champion research integrity, quality and support, within and across research disciplines. We achieve this through:

- **Dedicated research time.** Facilitated through our workload model, academic staff devote at least 40% of time to research. Protected research time helps our researchers develop their research portfolios and publish work in highly-regarded journals. After seven terms, academics can apply for a *sabbatical (Academic Research and Education Leave [AREL])* (Table 3), with outcomes monitored against centrally approved research proposals. In REF2021, our researchers took **782** person-months sabbatical (AREL) (**£5.84m**). 74% of LUMS faculty follow a research-led career path (Figure 3), but LUMS' staffing strategy also promotes engagement and teaching-led careers. Engagement and teaching staff can use AREL to join research teams and extend the reach and significance of research impact. During REF2021, we invested **£76m** in research time.

Unit-level environment template (REF5b)

Figure 3. LUMS Category A Staff in relation to the Sector - Based on HESA Business & Management Cost Centres Data



- **Supporting faculty to take (appropriate) research risks** to deliver world-leading insights. A long-term focus on high-quality research outputs guides LUMS activities and review processes. Our Established Supportive Structures (see below) reinforce the importance of appropriate research and publication profiles: e.g. probation agreements for ECRs to prioritise impactful research and ‘revise and resubmit’ invitations from journals that are widely regarded as significant within a particular field or discipline; senior professors mentor and encourage ECRs.
- **Discipline profiles** translate generic promotions criteria into benchmarked discipline-specific norms to support quality and help researchers plan their research activities. Our profiles comply with the San Francisco Declaration on Research Assessment (DORA) and recognise the need to eliminate the use of journal-based metrics, such as Journal Impact Factors, in funding, appointment, and promotion considerations; and the need to assess research on its own merits.
- **Supporting research and skills development communities** through mechanisms such as research seminars, distinguished researcher visits, research-funding workshops, and our annual faculty research conference. We develop skills through co-authoring with senior colleagues; there has been a **417%** increase in publications in world-leading journals since REF 2014. LUMS researchers work with University Research Institutes for support with more complex funding applications. These wider networks foster peer-led learning opportunities.

We hosted **28 intensive writing retreats** where staff develop a paper with a writing coach during REF2021. In 2018/19, LUMS secured SAMS/NARTI (Society for the Advancement of Management Studies/Northern Advanced Rewarding Training Initiative) financial support for retreats welcoming ECRs from 19 NARTI institutions. Each retreat included ‘add-ons’ to promote ECR development and establishing a community of practice: ‘*Developing your intellectual identity*’ and ‘*Hosting your own online writing retreat*’.

- **Research ethics** underpin LUMS’ RRI approach and are integral to our research integrity framework. All proposed research goes through the *Ethics Committee’s* approval process. All new starters and PhD students undergo ethics training to ensure an understanding of the LUMS ethics approval mechanisms and standards.
- **Research Resources:** LUMS invests **£220k** annually in research activities, including: Visiting Scholars Scheme; pump-priming scheme (incentivising RRI funding applications); and our publication incentive scheme. Staff receive an annual personal allowance for scholarship activities, such as attending conferences and participating in training. We offer flexibility in how this is used to support the research development of those with caring responsibilities, disability, or other EDI considerations. Journal submission fees are paid by Departments.

Unit-level environment template (REF5b)

Library Support Services underpin the research environment across three distinct areas: **Open Access, Research Data Management** services, and **Research Intelligence** services (see the University Institutional Environment Statement). Of particular value to our open research environment are: Open Research Cafés, that host and continuously develop LUMS researchers' use and understanding of trusted research data repositories; bespoke consultation on data management plans providing advice on data management and sharing, championing FAIR principles (findable, accessible, interoperable, reusable); research intelligence analysis, promoting interdisciplinary research collaboration; and embedding DORA's *responsible use of metrics* culture within our LUMS community.

- **Responsible Research & Innovation (RRI) Support and Governance:** The central Research Support Office (RSO) bring interdisciplinary connections from across the University and other research & engagement networks into LUMS. They provide academics with research development, contract and post-award support. The RSO and LUMS Research Support Office staff (LUMS-RSO) support research activities in the School; administer the faculty Visiting International Scholar and Pump-Prime funds; organise events, such as writing retreats; identify and disseminate funded research opportunities; connect researchers with external partners; and provide targeted support for interdisciplinary Research Centres and Institutes. Research support is also embedded in departmental structures, providing tailored resources.
- Our LUMS **Research Enhancement programme** helps researchers access engagement and knowledge exchange support structures. In 2016, we introduced AD Engagement and Impact Development Manager roles to extend research impact through: individual and departmental impact training; a *Sharing Best Practice* programme; a LUMS Impact Seminar series; and supporting applications to the University's **£91.6k** ESRC/ EPSRC Impact Acceleration funds, **£315k** annual HEIF fund and the LUMS **£60k** impact fund.

LUMS is fully compliant with the **University's REF2021 Code of Practice** and was involved in its development. HoDs and the REF team attended targeted Code of Practice training and REF-specific unconscious bias training. LUMS fully adheres to all aspects of the Code, including the voluntary and confidential declarations of personal circumstances and the selection of outputs.

Establishing supportive structures

LUMS ensures all staff have an equal opportunity to thrive and progress by making support structures a central part of the vitality and sustainability of our School. To address market shortages and reinforce our collegiate culture, we invest heavily in growing and retaining talent, from ECR (constituting 20% (43) of our 210 strong research community) to Professor.

To help all our researchers navigate the challenges of multiple performance dimensions and the increasing need for interdisciplinary work, we have put in place:

- Our **Associate Dean (AD) Staffing**, supporting our *People Strategy*. This role is designed to ensure fair allocation of work and equal opportunities, enhance our inclusive, sustainable and transparent academic culture, and enable all colleagues to achieve their career ambitions. AD Staffing oversees the LUMS workload allocations, the annual reviews of staff (Performance Development Reviews), and probation agreements, and supports LU's membership and LUMS input to and adoption of *Athena SWAN*, *Stonewall Global Diversity Championing*, the *Disability Confidence* scheme, our *Gender Pay Gap* work, and champions wellbeing programmes and resources, including the Employee Assistance Programme (part of the 'Five Ways of Wellbeing' framework). LUMS' Resources Manager, HR Partner and HR Advisor support AD Staffing.

Unit-level environment template (REF5b)

- **Annual Performance Development Reviews (PDRs)** are central to LUMS' staff success and support. We proactively use PDRs to create opportunities for colleagues to acquire skills, capabilities and experiences aligned to our culture of progression. They provide information and advice on multiple career pathways that celebrate excellence in research, academic leadership, engagement, and teaching. They explore wellbeing, training and development needs required to achieve each individual's PDR objectives and inform the development of workload, roles and responsibilities. Compulsory training for senior colleagues conducting PDRs ensures consideration of EDI issues. Our AD Staffing works with Heads of Department (HoDs) to actively review performance and identify high-performing, promotion-ready candidates irrespective of self-nomination, recognising known gender biases in advancement and supporting rapid and appropriate progression with targeted advice.

PDRs help the School sustain succession planning, build in handover periods, ensure development is supported, and identify people for promotion without reliance on self-nomination. In the 2018 Staff Survey, 92% of LUMS staff confirmed they had participated in a PDR during the previous year.

- **Probationary agreements** support all newly appointed staff and vary in length depending on the nature of appointment (typically three years for ECRs). They provide clear performance criteria for progression and guide colleagues to achieve their full potential. Stretch performance targets are derived from discipline profiles. The probationary process is outlined in Lancaster's Institutional Environment Statement.
- **Promotions support** takes the form of workshops and advice from AD Staffing, HoDs and mentors. The Dean, AD Staffing and University Promotions Committee members provide feedback on all applications before submission to the University Promotions Committee. Promotion applications are assessed by a diverse panel against defined, clear and transparent criteria to ensure consistent, fair applications and outcomes.

Developing and recognising excellence in our community is critical to enabling individuals to thrive throughout their career. We have a notable track record in developing ECRs into world-leading researchers and academic leaders: we promoted **55** ECRs to Senior Lecturer, and **24** mid-career academics to Reader or Professor, **15** of whom started at LU as ECRs (Table 12). **Faulconbridge, Piacentini, Mason, Stevenson** and **Young** started as ECRs at Lancaster and are now among senior School and University leadership. LUMS' investment in staff development and retention translates into high average institutional tenure (**9 years** for L/SL; **24 years** for Chairs), underpinning our collegiate culture, and ensuring sustainability and continuity.

Table 12. Internal promotions during REF2021

Period	Promotions from Lecturer to Senior Lecturer	Promotions from Senior Lecturer to Reader	Promotions from SL/Reader to Professor
REF 2014	14 (8 male; 6 female)	5 (3 male; 2 female)	10 (8 male; 2 female)
REF 2021	55 (34 male; 21 female)	5 (3 male; 2 female)	24 (19 male; 5 female)

- **Mentor support schemes:** All ECRs benefit from our mentor support schemes. Senior faculty mentors offer advice, access to support services, and help with career path development through research plans (integrated into annual PDRs), identifying needs in terms of resources, skills and opportunities.

Unit-level environment template (REF5b)

LUMS provides external mentoring support via Distinguished Visiting Scholar (DVSs) appointments and the Visiting Scholars Scheme. Our DVSs, appointed on fractional contracts, guide, support and advise faculty on producing field-leading research targeted at highly-regarded journals; **14** faculty co-authored papers. For example, Morgan (ECR) and Nelson's paper on 'detecting bias due to input modelling in computer simulation' in the *European Journal of Operations Research*; Knight (DVS) and Latham's (ECR) paper on 'disabled people and digitalization' in *Organisation Studies*. LUMS made 18 DVS appointments during REF2021, strengthening the intellectual leadership of the School, particularly in Economics, Entrepreneurship & Strategy and Management Science.

The Visiting Scholars Scheme supports extended visits by international research leaders with the aim of developing joint projects, and strengthening research networks; **De Silva** hosted McComb (TTU) to co-author "Do Localities Benefit from Extraction of Local Natural Resources?" which won *The Energy Journal's Campbell Watkins Best Paper Award 2020*. During REF2021, **13** researchers and **14** journal editors visited, including Andersen (Northwestern), Hribar (Iowa), Myers (Tennessee), Riach (Monash), Shakespeare (Michigan).

- **Rewarding success:** We provide financial rewards for grants and leading publications, while the Dean's Awards celebrate valued work practices, including excellence in research, teaching, leadership, engagement and mentoring.
- LUMS is committed to the [Concordat to Support the Career Development of Researchers](#), guiding **Research Associate (RA) support and development**. This includes giving RAs dedicated time to develop their publication and research profile, ensuring they have an appropriate mentor, and providing extensive training and development support relating to their future career plans from the University's [Organisation and Educational Development](#) team. Bridging funds can be requested to support those on fixed-term contracts to ensure continuity of appointment between projects.
- **Leadership and training programmes** include the *Bonington Programme* (developing the next generation of senior academic leaders); grant-writing workshops; and PhD supervision training. External training is accessible: CABS' *'Deans & Directors Development Programme'*; BAM's *'Development Programme for Directors of Research'* and ELEMENTA's *'Leading the Global University'*.
- **Equality, Diversity & Inclusion** is a priority area, supported by ongoing review and action. Respect for diversity is actively promoted, and difference is viewed as contributing positively to the democratic and intellectual life of LUMS. We work to transform structural inequalities within the School, University and wider academic community, taking learning from our EDI research to lead the way on university groups and external bodies. For example, **Stead, Leitch, Alkhaled**; Academy of Gender, Work and Leadership. **Leitch** is PI on a Horizon 2020 EDI in academe project; **Piacentini** and **Leitch**, sit on the University Gender Pay Gap Task Force; **Izzeldin** and **Talib**, are on the University Strategic Race Advisory Group; **Piacentini** and **Boylan**, played key roles in the University Athena SWAN Self-Assessment Team; **Remke**, is on the University Diversity Committee, Chartered ABS; and **Mason**, is a British Academy of Management Chair and EDI project lead.

We have established working groups to ingrain EDI principles and make them more visible within our community. The LUMS HR Committee oversees EDI issues and drove our Athena SWAN Bronze submission (November 2020), which adopted an inclusive approach in its creation. Current EDI practices include mandatory training, periodic staff surveys and regular

Unit-level environment template (REF5b)

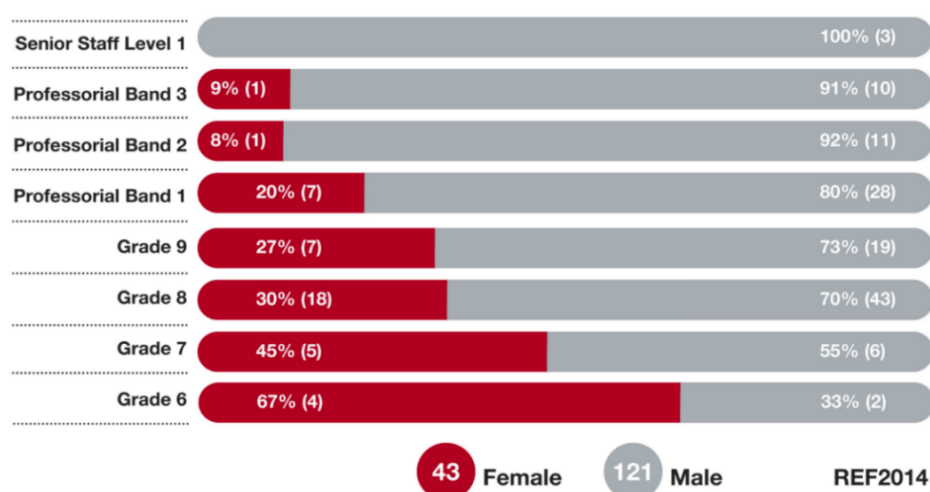
Head of Department/LUMS meetings, where concerns are raised and addressed, with support from the senior LUMS Team and HR Partner.

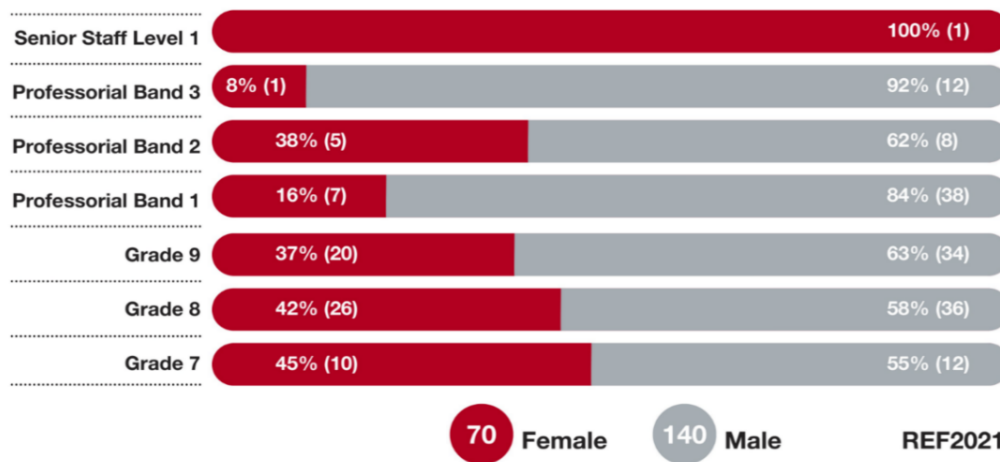
We recognise the needs of staff with caring responsibilities and offer **flexible working** where possible, without detriment. **110** months of parental leave was taken during REF2021. Parental leave arrangements among men nationally is low (approx. 1%). We are collecting data on dual career families and raising awareness of shared parental leave policy within LUMS. We also support academics taking adoption, maternity and those returning from long-term sick leave. We are committed to supporting staff and PGRs with family commitments; where possible, meetings, seminars and colloquia are scheduled between 10am and 4pm to accommodate carer responsibilities. During COVID, we have operated within a caring responsibility framework to be more flexible in our support of colleagues. In line with University practice, lecture scheduling seeks to consider individual family and carer responsibilities.

To enhance our ability to promote **gender equality** and address institutional imbalance, LUMS has recognised the need to monitor trends more thoroughly and to establish the routine collection of disaggregated data in all areas: recruitment, workload, administrative responsibility, leadership and career progression. This will increase transparent reporting of our EDI status and achievements at annual academic away-days, in workforce planning discussions, and will heighten awareness of EDI, enabling us to develop clear action plans for priority areas.

We are making progress. A third of academic staff are female, up from 26% in REF2014, (Figures 4a, 4b); 70% of females attending interview are successful; and the LUMS Leadership Team is gender-balanced. In promotions to Senior Lecturer, 79% of female applicants succeed; 72% of males; and for promotion to Professor, 82% of female applicants succeed; 78% of males.

Figure 4(a) REF2014 and 4(b) REF2021. Gender Diversity by Grade: Snapshots: 31st July 2013 and 2020

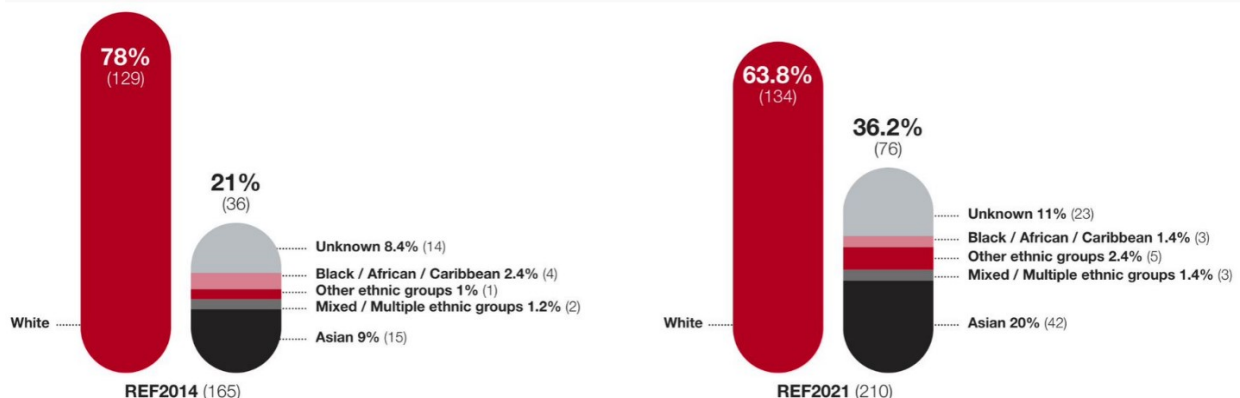




There is more work to do. The gender pay gap remains an issue, and our first step in addressing this has been to make the problem visible. Figure 4b shows gender imbalance increases after Grade 9 (a structural problem amplified by the long tenure of our professors; 24 years). As part of our Athena SWAN ambitions, we are working closely with the University, developing actions to rectify this complex problem. Changes include putting forward non-self-nominating females for promotion, providing those returning from parental leave with additional research support, and providing unconscious bias training for HoDs.

Similarly, our **ethnic diversity** has risen to 36.2% since REF2014: Asian researchers now constitute 20% of our community; white researchers constitute 63.8%, representing a 14% increase in diversity (Figures 5a, 5b). But more needs to be done here too. Work to clearly identify institutional and cultural barriers to inclusion in progress.

Figure 5(a) REF2014 and 5(b) REF2021. Ethnic Diversity Snapshot: 31st July 2013 and 2020



We provide **disabilities support** for long-term physical and mental health conditions through occupational health services and adaptations to workload. Where needed, we provide a supported return to work in a suitable role to enable individuals to thrive, working with a staff member’s health support team if requested by them. We provide technology, training and coaching support, alongside reductions in teaching-related reading and marking tasks for those with dyslexia and related disabilities.

Collectively, these structures promote our equality and diversity profile.

Unit-level environment template (REF5b)

- LUMS works intensively to support staff and develop a **wellbeing** culture. Our Departments provide peer and line-management support, and the Chair of the LUMS Safety, Health and Wellbeing (SHaW) committee oversees wellbeing awareness-raising initiatives. The committee organises informative sessions, mental health first aid courses, and conduct focus groups to understand work-related issues. If LUMS staff need further help, they are encouraged to access the University's wellbeing support services and [Staff Wellbeing](#) website. Such measures help sustain LUMS' core values of a healthy and vibrant community.

Unit-level environment template (REF5b)

2.2 Post Graduate Research (PGR) Structures, Training and Support



LUMS had **280 doctoral programme registrations** and **225 PhD graduations** during REF2021 (Figures 6 and 7). We have high expectations of our PhD researchers and work with this vibrant international community to shape ambitions, open opportunities and help them to become the next generation of academic research leaders, practitioners and policymakers.

Figure 6. EDI Gender Analysis of PhD registrations during REF2021

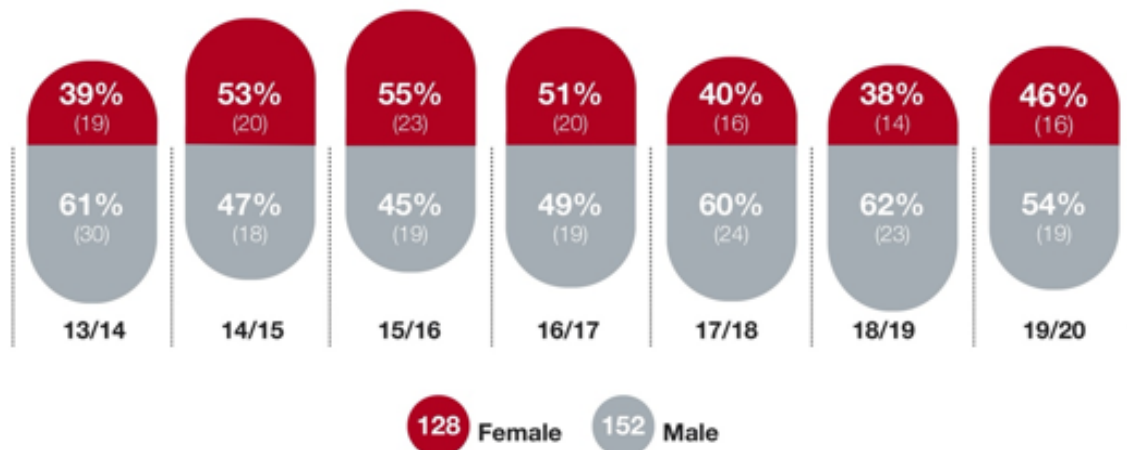
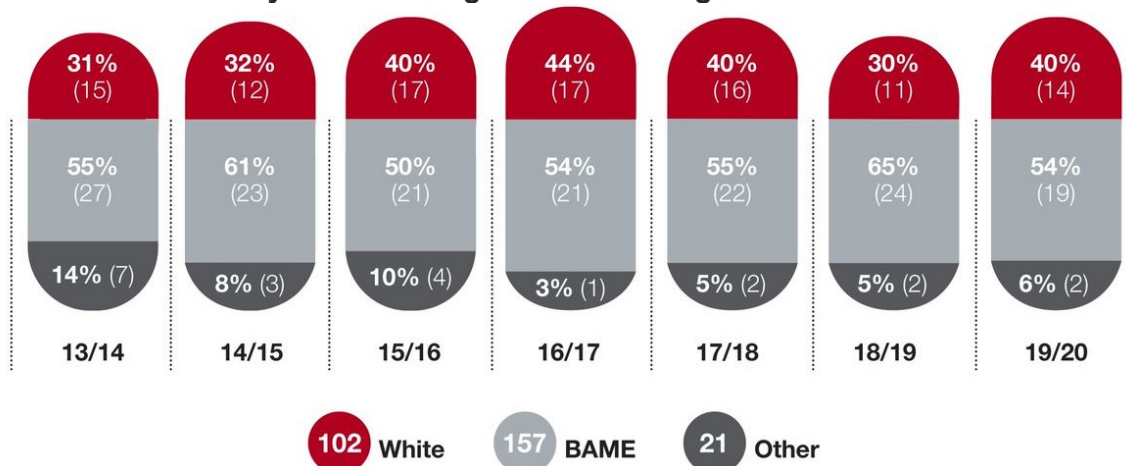


Figure 7. EDI BAME Analysis of PhD registrations during REF2021



Unit-level environment template (REF5b)

We foster disciplinary excellence while familiarising PGRs with interdisciplinary approaches to research. Our programmes are founded on LUMS' RRI and EDI principles and practices, to produce the research skills required for our future knowledge-based economy. The employability of our PhD researchers is vital; we place great emphasis on setting expectations for their research and working lives, so they acquire skills in teaching, researching, publishing and engaging with practitioners. Tailored careers services help PGRs present themselves and their work to best advantage. To ensure PGRs are aware of a wide range of options, we offer workshops on job hunting, career planning, and securing both academic and non-academic jobs, supporting applications and interviews. We work with PGRs to help them understand the value and practice of network building for career enhancement. All our PGRs have access to a comprehensive online careers portal and fully qualified careers professionals. Of the 48% of PhD graduates responding to our destination survey, 33% secured jobs in industry or the public sector; 67% secured academic positions in the UK and internationally, some achieving placements at Top-50 institutions (e.g. Australian National University, LSE, Manchester University in 2018).

PGR achievements include: **127** co-authored papers, **480** conference presentations and **6** doctoral researcher excellence awards (Table 13).

Table 13: Examples of Doctoral Candidate Excellence Awards

Doctoral Researcher	Excellence Award
Alshallaqi	Best Paper Award (2019) European Group for Public Administration Conference, Belfast,
Benstead	Best Thesis: Emerald/EFMD Outstanding Doctoral Research Award (2018)
Jalili Tanha	Best Paper Award: British Academy of Management (2017)
Morgan	OR Society PhD prize (2020)
Sanchez	Best PhD Thesis (2020 INFORMS Aviation Application Prize)
Santos	Emerald/EFMD Outstanding Doctoral Research (2016)

Our investment in PGR training and support was **£12.8m** in REF2021, with LUMS scholarships covering full costs (fees & living allowance) awarded to **46%** of PGRs.

PGR Structures and Funding

LUMS programmes attract high-quality students from leading international universities, as well as from our specialist Masters programmes and industry. Entry standards are demanding, with PGRs holding an excellent undergraduate degree and 65% or more at Masters level.

We offer **four UKRI-approved Research Training Pathways**: Accounting and Finance; Economics; Management and Operational Research. Additionally, the pioneering [STOR-i EPSRC Doctoral Training Centre](#), chaired by **Glazebrook** (ManSci), is a collaboration with the Department of Mathematics and Statistics. STOR-I partners with Naval Postgraduate School, Northwestern University and MIT in co-supervision.

23% (57) of PGRs are admitted to four-year programmes that integrate 12 months of assessed modules with three years of supervised research. Three-year programmes in Economics, Management, Management Science, and Marketing are offered to students with appropriate backgrounds. These are either the traditional book-style output or the three-paper model, depending on the nature of the research project. PGRs often publish before graduation, best positioning them for successful academic roles with leading HEIs and impactful industry positions.

Unit-level environment template (REF5b)

STOR-i's ground-breaking approach to statistics and operational research is developing a new generation of researchers capable of contributing to academia and industry. STOR-i's strategic multinational research cooperation objective enables PGRs in each institution to spend extended visits with one another. All students have substantial industrial engagement, with 80% of PGRs co-funded and co-supervised by partners such as BT, Shell, Unilever, Rolls-Royce and the Met Office. In 2019, STOR-i was awarded third generation funding (the only centre of its kind to be funded for a third time) and will benefit from more than **£10m** of investment from the EPSRC, Lancaster University and industrial partners. This will fund **70** PhD researchers across five cohorts; the first started in October 2019. Total PGR support provided via STOR-i exceeds **£1.1m** (Table 14).

Table 14: Examples of STOR-i's Industry Funded PGR Projects

FY awarded	Award	Funder	Project Full Title
2013/14	£30k	National Nuclear Laboratory Ltd	Multi-Faceted Scheduling for the National Nuclear Laboratory
2013/14	£31.5k	North West Ambulance Service NHS Trust (NWAS)	Planning Paramedic Emergency Services in NWAS
2015/16	£30k	ATASS Ltd	Forensic sports analytics
2015/16	£30k	Aimia Coalition Loyalty UK Ltd	Customer Analytics for supply chain forecasting
2017/18	£30k	Morgan Stanley	Optimisation in finance
2017/18	£30k	Rolls-Royce	Symbiotic Simulation in Airline Operations Environment
2017/18	£30k	Network Rail Infrastructure Ltd	Optimising service recovery after perturbation
2018/19	£30k	Rolls-Royce	Mathematical Models and Algorithms for Optimising Aircraft Engine Maintenance Scheduling Decisions
2018/19	£30k	Sellafield Ltd	Optimal Scheduling for Decommissioning of Nuclear Sites
2018/19	£30k	Office for National Statistics	Efficient clustering for high-dimensional data sets

Competitive LUMS funding schemes reinforce the quality of our PGR offering and ensure sustainability. Our annual scholarship budget was **£382k** in 2008, rising to **£537k** in 2012, and **£1m** in 2019. We recruit the best, awarding funding based on a candidate's academic track record and proposal quality.

Our **standard two-person supervision model** combines senior faculty and ECRs, the former providing mentoring and guidance to the latter, creating a collaborative, more diverse supervision experience. Several LUMS PGRs benefit from cross-institutional supervision with the Universities of Manchester and Liverpool. The STOR-i supervision model involves industrial and/or international academic partners.

Unit-level environment template (REF5b)

PGR Training and Support

LUMS offers PGRs two broad high-quality training approaches reflecting international discipline norms. The Management pathway combines 30 credits of ESRC-approved core training in theory and methods in LUMS, with supplementary development opportunities ranging from research seminars to specialist training courses both internally (Faculties of Arts and Social Sciences; and Science and Technology) and externally (DTP partners). This structure enables doctoral researchers and supervisors to develop tailored training solutions that meet individuals' project-specific needs.

Training on four-year ACF, Economics, ManSci and STOR-i pathways follows US doctoral training norms, with a fully-assessed programme of modules (180 credits) in year one, providing the discipline-specific tools required for world-class research. Training focuses on theory, research design, statistical methods and coding, with progression to year two conditional on meeting challenging performance targets. Each LUMS Department provides additional discipline-related training. ACF and Economics pathways include modules offered by the University of Manchester (LUMS pays travel costs), with reciprocal arrangements. This suite of shared specialist PGR modules generates a dynamic classroom environment and a vibrant doctoral network.

Collaborative training arrangements, including [NARTI](#) and [Methods North West](#) (Manchester, Liverpool and Lancaster), benefit PGRs. **Boylan** is Director of the EPSRC-approved National Taught Course Centre in Operational Research initiative ([NATCOR](#)), which provides training to c.100 PhD researchers annually and is closely associated with STOR-i and the Operational Research doctoral programme. This LUMS-hosted collaboration between 12 universities develops and delivers taught courses in operational research to PhD students. CENTRAL and CMAF support doctoral training activities.

Embedding PGRs in the LUMS research community is central to creating a vital, sustainable research environment. Training takes place across departments and faculties; and PGRs can co-locate in LUMS Research Centres, in direct contact with faculty members and external partners. Our doctoral researchers are integrated into: Departmental and Research Centre seminar series; doctoral research events; annual cross-faculty workshops; DTC/DTP conferences; the LUMS research conference; and co-authorship with faculty. Chaired by the Doctoral Programme Director, Department PGR representatives attend termly meetings with module leaders and collectively devise ongoing improvements for our PGR community. We provide funding to support attendance and presentations at international conferences and PhD colloquia. During REF2021, PGR students presented papers at **240** prestigious international conferences and co-authored **127** high-quality journal articles with faculty.

LUMS co-organises Lancaster University's annual social science '[Intellectual Party](#)' for PhD researchers, in collaboration with FASS and the [North West Social Science Doctoral Training Partnerships](#). The event exposes researchers to an international network of their peers and senior academics, providing the opportunity to spark collaborations across institutions and disciplines. We welcome c.90 ECRs and PhD researchers each year.

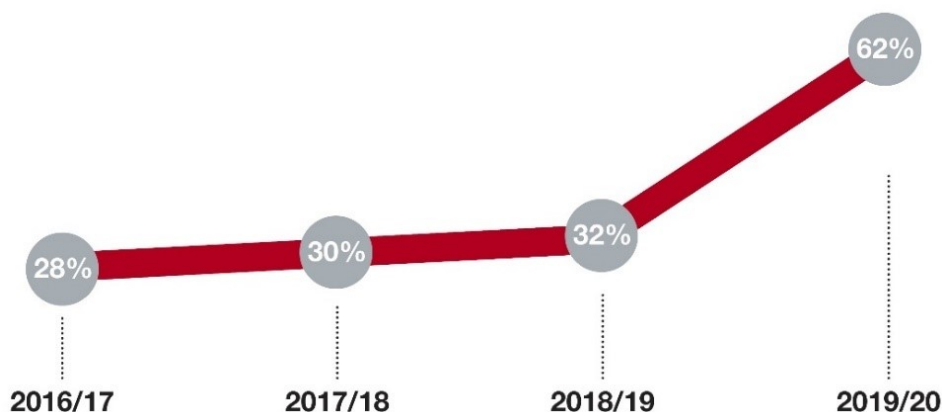
3. Income, infrastructure and facilities

LUMS' investments build researcher capabilities and provide professional research and engagement support services, acting as a platform to increase research income and create a fertile environment for extending the significance and reach of our research impact.

3.1 Research Income

We guide, encourage and support staff in research funding applications appropriate to their career experience, providing the environment to produce world-leading impactful research. Through investment in Research and Engagement support, we have: increased funding applications by **133%** since REF2014; grown our European Funding income stream to **£3.4m**; and increased our application success rate from **28%** in 2016 to **62%** in 2020 (Figure 8). In 2019, we successfully renewed our Small Business Charter award, which recognises LUMS' extensive research and engagement with SMEs. These achievements will sustain our vibrant research environment and ensure we continue to flourish.

Figure 8. Increasing % of Successful Grant Applications from LUMS Researchers



Research funding is not treated as a performance outcome, rather it powers our RRI approach. Between 2014 and 2020, LUMS staff were awarded **361** engaged, externally funded research projects from 579 submissions, generating **£14.68m** in funding from, among others: **53** UK Research Councils, (**26** ESRC, **11** EPSRC), **20** European Commission (**19** Horizon 2020), **14** governmental agencies, **31** UK charities (including **7** Leverhulme Trust), and **36** private company grants. This significant funding underlines the importance and relevance of our research for the economy and society (Table 15).

Table 15. Grant Awards by Funding Bodies

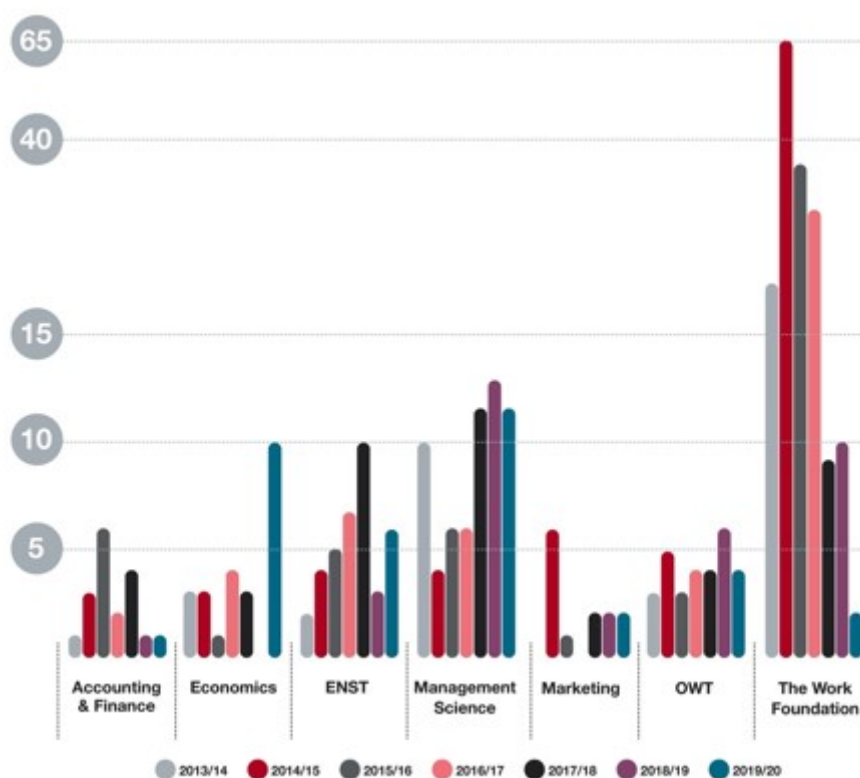
Awarding Bodies	Academic year ending (£k)							
	2014	2015	2016	2017	2018	2019	2020	Total
EU Others	58	14			295		117	484
EU CEC	96	732	1,167		328		634	2,957
NHS & Health Bodies	43	31			8			82
Non-EU Non-Industry	82			8	2		119	211
Other	586	976	796	676	18	25	26	3,103
Lancaster University (Internal)	10	24	22	15				71
Research Council	52	1,255	365	335	586	1,061	1,295	4,949
Royal Society				2				2
UK Central Govt.	584			5	68	112		769
UK Charities	16	81	177	298	44	67	153	836
UK Charities Other			20	7	42	8	83	160
UK Industry	38	4	106	8	543	310	124	1,133
UK Local Govt.		3						3
Total	1,555	3,096	2,631	1,339	1,934	1,583	2,551	14,760

Research income contributes significantly to the enhancement of LUMS' RRI environment. It has:

- Opened opportunities to devote significant time to world-class research activities.** For example, **Young's** ESRC-funded (£424k) interdisciplinary work with the University's [School of Computing and Communications](#) and [Centre for Corpus Approaches to Social Science](#), 'Analysing Narrative Aspects of UK Preliminary Earnings Announcements and Annual Reports'. The team worked with one of the world's largest asset managers to develop investment tools; the Financial Conduct Authority (FCA) to evaluate its market monitoring strategy; the Financial Reporting Council and the Pensions and Lifetime Savings Association to promote superior corporate reporting and governance.
- Attracted and developed new research talent by funding Post-Doctoral Research Associate (PDRA) positions and doctoral fellowships.** For example, [CENTRAL](#) attracted external funding from Horizon 2020 ([OptiFrame](#); £315k) and EPSRC ([OR-MASTER](#); £2.3m. [RESPOND-OR](#); £510k), leading to the recruitment of seven PDRAs on cutting-edge, high-impact projects. The experience and knowhow acquired enhanced their capabilities and helped develop career paths: Yu (OR-MASTER) is now Assistant Professor at the Technical University of Denmark, Fomeni (OptiFrame) is Assistant Professor the University of Montreal at Quebec, and **Fairbrother** and **Shone** (OR-MASTER) are Lecturers in LUMS' Department of Management Science.
- Increased the international visibility and reputation of LUMS through participation in international research networks.** For example, **Downs** is PI on Horizon 2020-funded [Eliemental](#) (£372k) and [Elie](#) 2.0 (£94k), Europe-wide projects working with education and business partners in Romania, Greece, Bulgaria and Poland to improve the chances for socially excluded groups and communities to establish and develop SME businesses. Section 4, Figure 12 illustrates the breadth and depth of our international collaborations enabled through funded research.

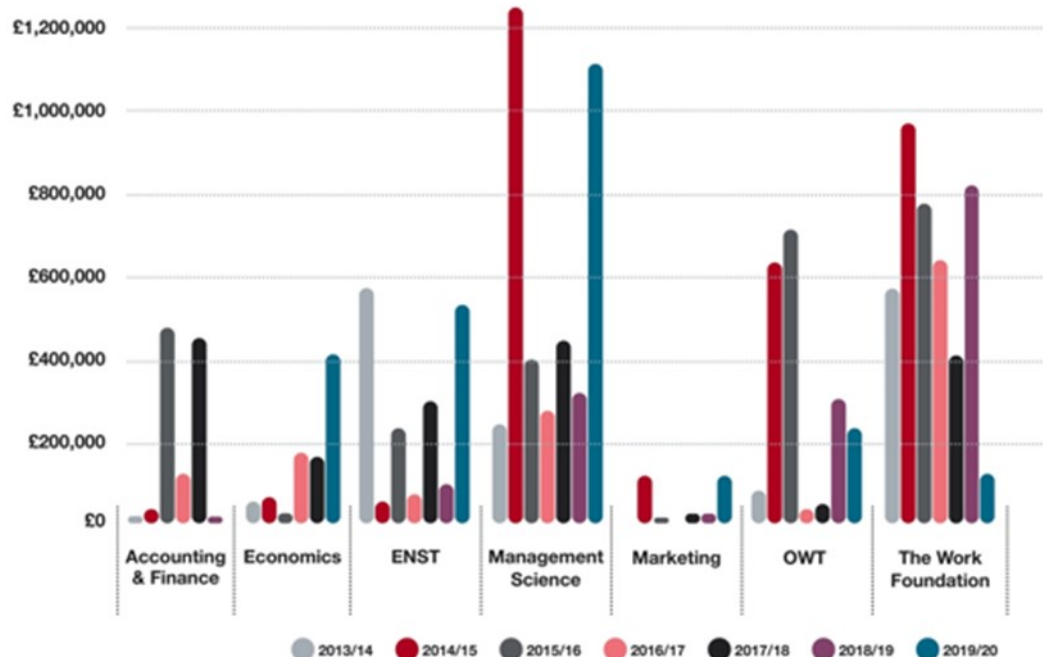
- **Facilitated engagement with key stakeholders.** For example, **Mason** works on the Department for Digital, Culture, Media and Sport (DCMS)-funded Mobile Access North Yorkshire ([MANY](#)) project (£425k), with the Faculty of Science and Technology, Quickline, DCMS, North Yorkshire County Council, public services, and tourism and technology SMEs to tackle the socio-economic digital divide between urban and rural communities.
- **Leveraged the significance and acceleration of research impact.** For example, **Spring** (ManSci) and **Faulconbridge** (OWT) work across the Centres for Productivity and Technological Futures with Innovate UK and other UK universities on Artificial Intelligence in Professional Services Firms. This is funded by the Industrial Challenge Strategy Fund and ESRC as part of the £20m 'Next Generation Services' government investment. They work directly with accounting and legal SMEs as they implement technologies, helping them overcome issues through design sprint programmes.

Figure 9. Number and Distribution of Funded-Research Projects



Key priorities for research strategy include wide participation of researchers in funded-research activities, and the increased success rate of research bids. During REF2021, **101 (48%)** LUMS researchers participated as Principal Investigators (PIs) and Co-Investigators (Co-Is) in funded-research bids, with some achieving multiple awards (**Downs, Mason, Spring, Walker, Zografos**). Participation in funded research activity is distributed across LUMS departments (Figures 9, 10) and Research Centres, the latter reported here under the PI’s departmental affiliation. In line with this effort, we have shifted the emphasis of the Work Foundation’s activities to work more closely with our researchers in leveraging the significance and reach of our research for policy and practice impact, rather than generating their own research funding.

Figure 10. Value (£s) and Distribution of Funded-Research by Department



3.2 Research Infrastructure and Facilities

We are investing in high-quality infrastructure through the **LUMS Space Programme**. The five-storey new-build West Pavilion opened in 2021, featuring: two 200-seat lecture theatres, a 125-seat lecture theatre, executive education collaboration spaces, and offices, representing a capital investment of **£28.5m**. Our second redevelopment phase will refurbish existing buildings to create a modern and collaborative working environment with flexible working space at its heart and innovative teaching and research facilities throughout. Work, due to start in Spring 2020, is postponed due to Covid-19.

We have invested in **computer hardware to support big data analysis** in ACF (market microstructure projects in the Centre for Financial Econometrics, Asset Markets and Macroeconomic Policy). **Software** to support advanced programming analysis (e.g. Stata, SAS, Eviews, Matlab); and **database subscriptions (£2.75m)**, including WRDS, Compustat, CRSP, Datastream, Execucomp, Bloomberg, Thomson Research, Thomson Reuters EIKON, Extel, Worldscope, InvesText, I/B/E/S, JCF, Perfect Information (plus Perfect Information API), Factiva, and NYSE Trade and Quotes (TAQ). These resources provide LUMS staff with one of the strongest financial database infrastructures in UK academia.

The **Experimental Economics Laboratory (LExEL)**, constructed during REF2021, is a dedicated space for the development of experimental research, such as economic decision-making by individuals or groups in carefully controlled environments. It represents a **£40k** investment and enhances the applied research output of the Behavioural and Experimental Economics group, including **Winter**'s work that informs collaborations with the UK & Israeli governments.

Research ethics are an important element of our sustainable research infrastructure. All LUMS researchers (staff and students), obtain ethics approval before data collection begins. The joint

Unit-level environment template (REF5b)

FASS-LUMS Research Ethics Committee (REC) shares best practice, helping ECRs develop ethical research practices and support innovation from all researchers through the development of suitable protocols for work with stakeholders and communities. For example, with the development of the 5G Rural Integrated Testbed ([5GRIT](#)) project, **Mason, Palo** and Jalili-Tanha (PhD) worked with the REC to ensure local communities in Cumbria were given a real voice in the process, capturing their opinions and thoughts in the design and implementation of their research.

Impact and Engagement is built into every stage of the research cycle, with pathways to impact fully incorporated into our projects, and academics connected with appropriate impactful collaborators. The University-wide Research Enterprise Services (RES) work closely with the LUMS Engagement Support Office (ESO), providing academic (through AD Engagement) and professional expertise for our business and management researchers. Highly collaborative projects include Wave 2 Growth Hubs (W2GH), Lancashire Forum, Cumbria Forum, EnginE, Made Smarter and Productivity through People. Central teams support major cross-faculty bids, fostering important connections and knowledge exchange opportunities that cut across the University, extending academic and research networks. LUMS has been involved with Science Innovation Audits (SIA) for Sheffield advanced manufacturing; and a clean growth North West Coastal Arc, which included Eden Project North and spanned from Cumbria to North Wales. These SIAs looked at RRI challenges and set agendas for researchers to work with industry, highlighting LUMS' work on industrial productivity and the transformational effects of leadership. LUMS has worked with RES to be part of the UK branch of MIT's Regional Entrepreneurial Action Programme ([REAP](#)), funded through BEIS. Working with Loughborough University, Lancaster engaged with Local Enterprise Partnerships (LEPs) from Cumbria, Lancashire and Cheshire to enhance productivity and business growth, working with corporations, entrepreneurs and public bodies.

Engagement supports pump-priming of impactful research bids and leverages our research excellence. LUMS' ESO enables connections between researchers, professionals, Entrepreneurs-in-Residence, and business partners, including SMEs, NGOs, blue-chip organisations (such as BAE Systems, Siemens and Ernst & Young), local, regional, national and international policymakers, local authorities, LEPs, government departments, the OECD and World Bank.

The **Work Foundation** (WF) is a key element of the LUMS engagement support infrastructure. The WF is a leading provider of analysis, evaluation, and policy advice in the UK, connecting our researchers with employers, policymakers, practitioners and other experts to develop and communicate high-quality solutions through applied research. The WF shapes public policies and organisational practices while empowering individuals, with its focus on '*good work*'. WF's research programmes include: Gender Matters (with **Leitch, Stead** and the Academy for Gender, Work & Leadership); the role of Artificial Intelligence in Business (with **Tarafdar** and the Centre for Technological Futures); UK productivity (with **Spring, Faulconbridge** and the Centre for Productivity); and Health and Wellbeing, building on work on the effect of migraine on productivity levels and the economy in the UK and EU, mental health in the film and TV industries and public health issues (Table 16).

The WF serves as a global strategic advisor for the University, working with the OECD on their Job Strategy Policy Forum, Skills Strategy Advisory Group and Local Employment and Economic Development Programme. It operated as Chair of the Fit for Work UK Coalition until 2018, influencing the UK Government's Work and Health Unit.

Unit-level environment template (REF5b)

Table 16. Illustrative Impactful WF Projects

Projects	WF Activities
Policy and Evidence Centre for the Creative Industries	Significant role in establishing Policy and Evidence Centre for the Creative Industries, a 5-year Arts and Humanities Council and Industrial Strategy funded project, worth £550k to LUMS.
Skills Forecasting for the British Film Institute (BFI)	Working with the creative industries sector skills council. Two-year project is worth c.£200k.
The 'Looking Glass' Project	Conducting a survey and interviews on behalf of the Film & TV Charity into mental health issues among industry workers. 'Looking Glass' report published in February 2020, leading to the establishment of the Film and TV Taskforce on Mental Health, and setting up of 'Whole Picture Programme' by the charity, involving Channel Four and Sky TV.
Women in Banking and Finance	Developing a thought leadership function for the professional association, cementing LUMS initiatives such as the Academy for Gender, Work and Leadership. Four-year project worth at least £400k.
Productivity through People	Working with Be the Business, the national productivity council, and conducting the first research commissioned by them on the performance of businesses across the UK economy.
Made Healthier	Working with North West businesses to increase awareness of mental health issues in the labour market.

Communicating Research Insights: We've made strategic investments in a LUMS Media and Communications Officer, working in the University's Press Office, and a Research Engagement Content Manager. They underpin engagement through the promotion of research, major conference presentations and events to the mainstream, regional and specialist media. Broadcast training is provided to academics interested in promoting research and expertise. Campus TV and radio studios provide easy access when opportunities arise. Since 2016, we have tracked the significant role broadcast media plays in disseminating LUMS research (Table 17), engaging more than 87m people in 2019 alone. LUMS' [Fifty-Four Degrees](#) magazine (print and online) promotes research activities to academics, alumni, students, businesses and research partners, among others.

Table 17: LUMS Researcher Media Reach within the REF2021

Media	2016	2017	2018	2019	2020 (to July 31)
TV	3,596,116	24,884,093	68,880,682	47,588,346	21,467,019
Radio	27,707,000	33,038,000	42,078,000	42,386,000	13,870,813

An illustration of the cumulative value of media coverage: **Johnes** (Economics, Centre for Productivity) was interviewed on the wage premium for people moving jobs (BBC Breakfast, December 3rd, 2018), leading to research and consultancy work with RED Consultancy and Totaljobs on the cost-of-living differences across UK regions. **Johnes** generated research income and played a major part in designing a survey of workers across the regions, which resulted in further media engagement, again on BBC Breakfast as well as the BBC News Channel and Sky

Unit-level environment template (REF5b)

News Radio, and in business engagement events. The survey data provided **Johnes** with further research opportunities on the willingness to migrate, and a published paper. Other examples include **Downs** (Marketing), whose work has been published in The Conversation, Biz Ed, The Guardian, and various specialist magazines, leading to new contacts around the world, as well as increasing impact; and **Hayes** (OWT), who benefitted from new research collaborations and new contacts in organisations, including South Lakeland District Council, who saw Hayes's Horizon 2020 Mobile-Age work through press coverage.

42% of our researchers appeared in the media in REF2021: 68 researchers writing 135 [Conversation](#) articles which have been read two million times; 22 researchers contributing to 246 TV interviews and features, reaching a total audience of 172.7m; and 29 researchers contributing to 152 radio interviews and features, with a total audience of 167.7m. Interdisciplinary research means our outputs and grant awards are also reported in the media via other faculties.

Executive education is an important mechanism for impact and engagement. The Centre for Executive Training and Development (CeTAD) leverages research for impact in the design and delivery of executive education programmes for local, regional, national and international managers and professionals. Innovative open and customised courses align academic strengths with the changing needs of practitioner communities. Involvement in executive education opens up impact pathways for LUMS researchers and exposes them to problems that executive managers face. CeTAD acts as a mechanism to connect practitioner groups with the latest research and expertise. Activities are supported by the LUMS ESO Partnership Development Managers, Recruitment Officer and Executive Education Development team. Examples of executive programmes include leadership development programmes for doctors and clinical staff in the NHS, incorporating **West's** (OWT) work on collective leadership; and Productivity through People (PtP) and Made Smarter, which connect LUMS research on Productivity and Technological Futures (**Spring, Kempster, Kotlar**) with application into SMEs.

Cross-faculty Collaborative Infrastructures: LUMS houses disciplinary expertise in its six Departments (Section 1.3.2) and uses its Research Centres (Section 1.3.1) to create funding-focused, policy-oriented interdisciplinary collaborations. In addition, University-wide Research Institutes act as engagement catalysts, bringing together LUMS researchers with other academics and external partners to address Grand Challenge problems, gain interdisciplinary understandings in relation to those problems and to work on complex research bids. For example:

- **Tarafdar's** engagement with the **Data Science Institute** ([DSI](#)) resulted in funding for the three-year (£987k) BIAS project '*Responsible AI for Labour Market Equality*', tackling gender and ethnic bias in recruitment and human resource management alongside Essex University, the University of Alberta, and industrial partners including Reed Talent Solutions and Profusion. **Tarafdar** and Hu (Sociology) formulated the research proposal following a DSI event. Knowles (School of Computing & Communications) contacted **Tarafdar** through the Centre for Technological Futures.
- **Deville** (a joint LUMS-Sociology appointment) has pursued work on open-access publishing through externally funded projects with the **Institute for Social Futures** ([ISF](#)). His first project, *Open Futures*, was funded by a £1k ISF seed corn grant, leading to £38.5k from OpenAIRE (Open Access Infrastructure for Research in Europe) for the *New Platforms for Open Access Book Distribution* project. **Deville** is working with the Library, leading the Lancaster aspect of the Research England funded, three-year *Community-led*

Unit-level environment template (REF5b)

Open Publication Infrastructures for Monographs (COPIM) partnership, involving Coventry University, the Centre for Mobilities Research, Birkbeck, University of London and Trinity College, Cambridge, the ScholarLed consortium of open access presses, the Directory of Open Access Books and The Digital Preservation Coalition. Research England awarded **£2.2m** of funding to COPIM from the Research England Development (RED) Fund, with further contributions from the Arcadia Fund (\$1.05m).

- Researchers from CENTRAL and the Centre for Productivity worked with **Energy Lancaster** on the *Hydrogen-to-Heysham (H2H)* project, setting up a [Hydrogen Hub](#) to create a clean economy across the city region (Figure 11). It brings together clean-air, planning, regeneration and low-carbon public sector stakeholders (including councils and LEPs), local and global energy (EDF Energy R&D UK) and technology firms, transport companies, heat consumers, scientists, economists, management experts (**Mason and Zografos**) and engineers. To date, the Hydrogen Hub has raised £400k investment from BEIS, and organised 12 workshops attended by 300 stakeholders.

Figure 11: Hydrogen-to-Heysham: Local Collaborators working with LUMS Researchers & Energy Lancaster to develop a Clean Economy for Green Hydrogen.



PGR infrastructures foster long-term multi-institutional collaborative research opportunities. The NARTI network connects leading business and management schools in the North of England. North West Methods links with Centres for Doctoral Training, and includes the Universities of Manchester and Liverpool, providing a common forum for training and development of research methods. The STOR-i Centre for Doctoral Training has distinctive international visibility and reach with globally leading institutions (Section 2.2).

Increased Consultancy Support: Researchers in LUMS have benefited from new central policies to revitalise academic consultancy; these enable and encourage academics to run consultancy work through the University's system, deriving positive impact for all parties. Earnings from LUMS consultancy going through the finance system increased from c.**£41k per year** to **£366k** in contracts across **24** projects in less than 12 months.

4. Collaboration and contribution to the research base, economy and society

Collaboration, community and engagement are central RRI pillars, helping LUMS promote a virtuous circle of practice informing theory, and theory improving practice. Our research and engagement activities position us as a regional hub and global force for business learning: innovating the disciplines; advancing knowledge and practice. We focus on nurturing quality collaborations with academia, business, policy and third sector leaders, addressing societal needs. We work with diverse academic and non-academic stakeholders, achieving local, regional, national and international reach. Significant investment in underpinning structures ensures LUMS has a strong collaboration platform:

- New infrastructure increases collaboration space (**£28.5m** LUMS West Pavilion, **£41m** Health Innovation Campus [HIC]);
- Investment in expertise (LUMS researchers, engagement and partnership teams) support collaboration management and leverage new opportunities;
- Engagement with, and sustained contribution to, business initiatives catalyses transformation (Bay Business Angels, Eden North, the HIC);
- Management structures embed engagement (Research/Engagement ADs; Departmental Directors);
- Department discipline profiles translate generic collaboration objectives into specific norms;
- HR policies incentivise and reward collaboration and engagement;
- Research Centres/Institutes promote interdisciplinary *Grand Challenge* research;
- The Work Foundation facilitates access to a wider stakeholder base within business, government and other external organisations;
- Investment of **£220k p.a.** in collaboration schemes promotes researcher mobility (Distinguished Visitor Scheme and supporting international visits).

Unit-level environment template (REF5b)

4.1 Collaboration and contribution to the research base



Through University-wide and School-based structures, LUMS researchers respond to local, national and international priorities through interdisciplinary and disciplinary contributions, with collaborations across the region, the UK and the world.

Local and regional academic collaborations: LUMS collaborates with all research active HEIs in the North of England. Programmes include shared parental leave (Manchester Metropolitan); innovation ecosystems for the rural economy (Cumbria); and digital market infrastructures (York). LUMS is active in [N8](#) and [NARTI](#). Regional collaborations are central to PGR training (Section 2.2).

National academic collaborations: LUMS researchers collaborated on externally funded projects at **46** UK universities, including **9** of the top 20 UK institutions in the 2020 QS World University Rankings (QSWUR). We co-delivered **18** conferences/workshops with partners including Bristol, Exeter and LSE. Researchers contributed plenary addresses for national associations, including British Academy of Management, British Accounting and Finance Association, British Sociological Association and Royal Economic Society.

International collaborations: LUMS collaborated with **71** top-100 non-UK QSWUR universities during REF2021. Researchers from **127** of the top 200 non-UK QSWUR universities visited LUMS to present research or work with faculty, who in turn participated in **632** international networks and research programmes (Table 18), including **9** Horizon 2020 collaborations (Table 25), delivering long-term research and capacity building beyond grant award periods. We engaged in collaborative doctoral arrangements with **5** international partners. **52%** of REF2021 outputs include non-UK co-authors (Figure 12). Our Open Access data repositories enable international collaborations (*Housing Observatory, Gulf One*).

Winter's appointment in Economics led to the launch of the Andrews and Brunner Lecture Series, featuring two Nobel Prize for Economics winners in successive years, Roth (Stanford) and Smith (Chapman), and engaging the research community across the UK in workshops.

For our PGRs, the Centre for Financial Econometrics, Asset Markets and Macroeconomic Policy fosters international cooperation to develop econometricians. Formal partnership agreements with Toulouse and WHU Otto Beisheim deliver workshops and support PhD mobility. Informal arrangements support reciprocal PhD visits (e.g., Maastricht with Accounting). As a founding member of the European Accounting Association's Talent Workshop, LUMS helped establish their PhD proposals feedback Peer Mentoring Initiative. STOR-i has formal collaboration agreements with world-leading academic institutions, including MIT's Sloan School of Management, Northwestern University, Naval Postgraduate School, University College Dublin, and Big Insight Oslo.

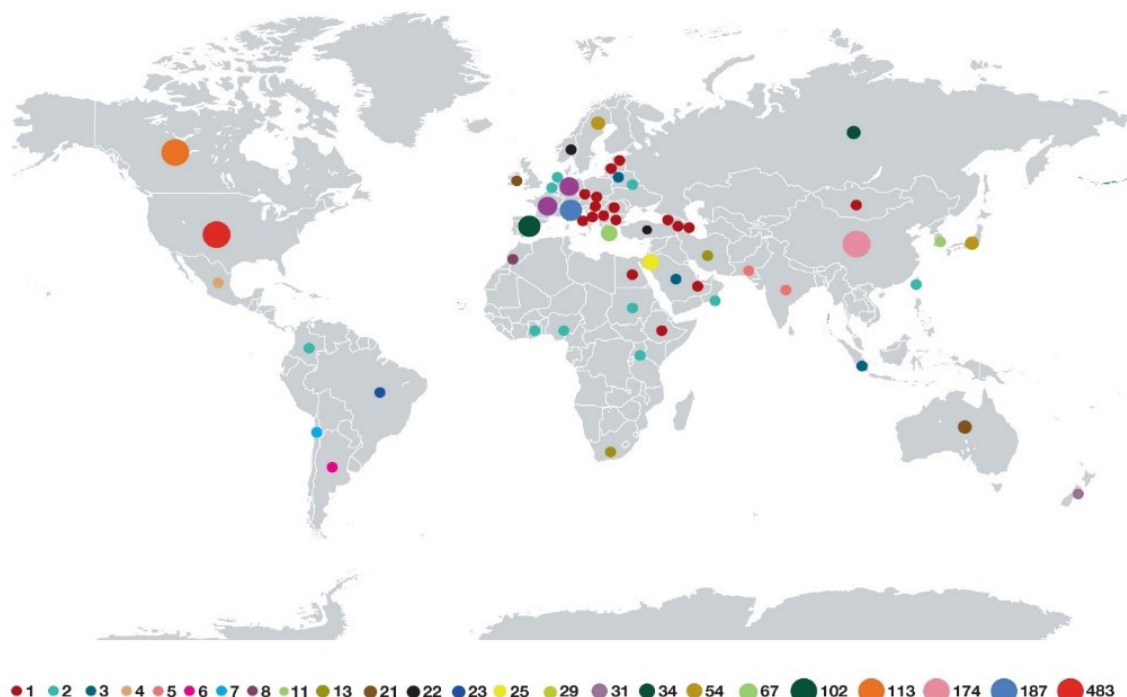
Unit-level environment template (REF5b)

Table 18: International networks of research excellence

Network	Description:	Outputs
Strategy-as-Practice Network	Founding member of network of 3,000-plus academics and practitioners across 150 countries, spanning strategic management, business administration, business history, entrepreneurship, management and organisational studies, marketing, leadership, anthropology, sociology, economics, economic sociology.	Teaching materials, books, journal special issues. 12 independent workshops and tracks at leading conferences (Academy of Management, BAM, EURAM).
Mergers & Acquisitions Network	Founding member (Bauer). Fosters knowledge exchange among Europe, USA, Asia M&A practitioners/scholars. Practitioner partners: Siemens AG, Aurelius, EY, Deloitte, T-Systems.	Webinar series hosted by M&A Review, German M&A Association, MADiscover.
Transformative Consumer Research Network	Piacentini is Advisory Committee Member. Network focuses on consumer research for societal well-being, predominantly in USA. Higgins, Cocker, Skandalis, Cronin shape UK/Europe direction.	Three conferences resulting in journal special issues; 9 international ECR workshops.
European Banking Centre	LUMS founded with Tilburg and Luxembourg (2014). c.50 top European researchers, policy bodies (European Bank for Reconstruction and Development, Bank of England), and international schools. Ioannidou on senior management team.	2 annual conferences/workshops; newsletters promoting policy-relevant research, research dissemination, an knowledge exchange with key policy bodies

Unit-level environment template (REF5b)

Figure 12. Geographical Spread of Internationally Co-authored Papers



Journal editorial roles: Colleagues held **115** senior journal editorial roles at **52** international journals (Table 19), and **83** editorial board positions at **54** international journals. Researchers accepted **28** guest editor roles (including *British Journal of Management*, *Human Relations*, *Strategic Management Journal*). 87% of faculty review for three or more international journals.

Table 19: Examples of LUMS Roles in Globally Celebrated Journals

Journal	Role
<i>Academy of Management Journal</i>	Vaara (Associate Editor)
<i>Entrepreneurship Theory and Practice</i>	Jack (Editor)
<i>Management Science</i>	Ehrgott (Associate Editor)
<i>Operations Research</i>	Letchford (Associate Editor)
<i>Journal of the European Economic Association</i>	Durante (Editor)
<i>Information Systems Research</i>	Tarafdar (Associate Editor)
<i>International J of Operations and Production Management</i>	Spring; Hendry (Associate Editors)
<i>International Journal of Research in Marketing</i>	Puntoni (Associate Editor)
<i>Journal of Operations Management</i>	Spring (Associate Editor)
<i>MIS Quarterly</i>	Introna; Sutanto (Associate Editors)

155 awards, prizes and honours: including best paper prizes (*Journal of Management Studies*; **De Massis**) and outstanding reviewer awards (*Entrepreneurship, Theory and Practice*; **Kotlar**, *Journal of Economic Geography*; **Faulconbridge**). High-profile awards include: Beale Medal, Premier Award of the Operational Research Society (**Glazebrook, Fildes**); President's Medal and Companion of OR Award of Operational Research Society (**Zografos, Eglese**); INFORMS Edelman Laureate Medal (**Zografos**); British Academy of Management Medal (**Mason**); Bank of

Unit-level environment template (REF5b)

England award for outstanding research on stabilisation policies (**Taylor, Zilberman**); and EGOS Honorary Membership (**Knights**).

17 researchers became Fellows, including: CEPR (**Dasgupta, Ioannidou**); AcSS (**Mason, Unerman**); Cabinet Office (**Ford, Mason, Spring**); Royal Society of Arts (**Williams, Zografos**); Journal of Econometrics (**Tsionas**); Operational Research Society (**Letchford, Zografos**); Chartered Institute of Transport and Logistics (**Zografos**); British Academy of Management (**Mason**). **Glazebrook** became an INFORMS Fellow (2016), a prestigious honour afforded to only **385** scholars worldwide.

Table 20: Illustrative Keynotes

Event	Date	Speaker	Place
ICAEW Information for Better Markets	2017	Unerman	London
International Symposium in Finance Conference	2019	Tsionas	Greece
Economics of Education Conference	2017	Johnes	Spain
Office for National Statistics Human Capital Measurement Conference	2019	Walker	London
Royal Meteorological Society	2014	Fildes	London
Royal College of Physicians	2017	Piacentini	London
Industry & Parliament Trust, House of Commons	2018	Stead	London
British Veterinary Association Annual Congress	2019	Hopkinson	London
Academy of Management	2017	Whiteman	Atlanta, USA
Academy of Management	2019	Sparrow	Boston, USA
NHS Board	2017	West	Edinburgh

We had **438 invited keynotes, plenaries and conference presentations** (Table 20). Conference Chairs include: **Collinson** (International Studying Leadership Conference, 2018); **Campopiano** (IFERA, 2019); **Glazebrook** (OR Society Research Panel, 2016-18).

Research Council or similar national and international committees: 105 researchers sat on or held reviewer roles, contributing to high-quality research training, disseminating knowledge, enhancing UK research, and democratising the research process. Faculty held key grant committee roles, including: ESRC peer review panel (**Alexander, Anderson, Faulconbridge, Hamilton, Hogg, Leitch, Mason, Nolte, Spring, Walker, Williamson**), EPSRC (**Eglese, Fildes, Glazebrook, Kheiri, Leitch, Letchford, Lulli, Zografos**), Australian Research Council (**Fildes**), Irish Research Council (**Dada**), Swedish Research Council (**Ahl**), National Science Foundation (**Selviaridis**).

Doctoral training programmes: LUMS delivered 27 ESRC DTP events and **41** NARTI workshops and retreats. Training is a Research Centre priority. For example, FEAMMP delivered **17** PhD workshops, **51** seminars and **2** summer schools. Researchers contribute regularly to high-profile European doctoral research training events: European Institute for Advanced Studies in Management EDEN seminar series (**Hendry, Selviaridis**), EAA Doctoral Colloquium (**Young**); and Summer Programme in Accounting Research (**Goncharov, Young**). **32** PhD graduates took up research positions outside academia.

Unit-level environment template (REF5b)

4.2 Research Collaboration with wider Economy and Society



The University Research Enterprise Services (RES), Research Institutes and LUMS Departments and Research Centres work together to support research and engagement beyond the University. LUMS works closely with businesses, representative bodies, policymakers and third sector organisations to influence local, regional, national and international policy and practice, and to design, deliver and manage business engagement programmes.

We follow a dual approach to developing sustainable and productive collaborations. 1) We focus on our **core strengths** and enduring business networks, where we are recognised as leaders in supporting SMEs, entrepreneurs, family businesses, and their supply chains. 2) We use our scale, diversity and structure to **respond to national and international priorities and user needs**; drawing on diverse disciplines, theoretical frameworks, methods and data. We prioritise collaborations that improve good work, productivity, organisational performance and sustainability, and encourage collaborations beyond traditional definitions.

Local and Regional collaborations: As a long-standing civic university, we focus significant effort on developing programmes with local and regional organisations (including Lancaster City Council, Cumbria and Lancashire Local Enterprise Partnerships, Manchester Growth Company, Cavendish Enterprises, Table 21). LUMS was one of the first UK business schools to receive the Small Business Charter Award, in 2014.

National collaborations: These involve policy forums, government departments (Cabinet Office, Department for Communities & Local Government, BEIS) and national regulators (FCA). Collaborative, research-led regional programmes are pioneers for UK-wide schemes (W2GH, Made Smarter, Productivity through People). The policy-oriented Work Foundation stimulates wider stakeholder involvement (Tables 21, 22).

International collaborations: We extend our reach by working with regulators (Securities and Exchange Commission, European Parliament), multinational corporations (Unilever, Pfizer, AstraZeneca), international business groups, NGOs and others. We have partnerships in **60** countries, including working to boost trade with China, build African water supply capacity, and improve natural disaster response in SE Asia (Tables 21, 22).

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Table 21: Collaborative networks and partnerships supporting SMEs

Collaborative initiative	Period	Role
Knowledge Acceleration & Responsible Innovation Meta-network	2009-14	Helping NW Europe SMEs access innovation support and technology. Improved regional competitiveness by creating technology transfer centre network.
Innovation for Growth	2010-14	Embedding innovation into business and management of 300 NW England SMEs. Supported product/process development, diversification and growth.
London Creative and Digital Fusion	2012-14	LUMS-led £5.8m project for Greater London Authority. Supported growth-focused creative and digital sector. Network comprises: Imagination Lancaster, Work Foundation, Queen Mary University, Centre for Creative Collaboration (University of London), Council for Industry and Higher Education, Royal College of Art.
Lancashire Forum	2013-20+	Directors and managers leadership support. Partnership with UCLAN/BOOST Business Lancashire. Performing well against targets: 137 businesses assisted; 39 jobs created; 17 new products/services developed.
Cumbria Forum	2014-20+	Complements Lancashire Forum. Delivered with Cumbria Growth Hub. All targets exceeded: 75 businesses supported; 38.6 jobs created; 20 new products/services developed.
China Catalyst	2014-18	Reinvigorated UK export performance, supporting trade development between UK SMEs and Chinese companies. Partners included HEFCE, Lancashire County Council, Guangdong Provincial Office of Science & Technology, Chinese Academy of Science, UK Trade & Investment, China-Britain Business Council, Technology Strategy Board.
Cumbria Innovations Platform	2017-20+	Assists Cumbrian SMEs to develop innovation strategies and accelerate ideas to market. Partnering with LU Faculty of Science and Technology.
Innovation in Manufacturing & Engineering	2015-16	Leadership and innovation programme with BAE Systems, Siemens, High Value Manufacturing Catapult, UK Commission for Employment & Skills.
Low Carbon Innovation Forum	2017-20+	Helps Lancashire SMEs embrace eco-innovation and reduce carbon footprint. Partnering with 43 SMEs.
Employer Engagement for Skills in Manufacturing & Engineering	2018-20+	Helps advanced engineering/manufacturing SMEs with long-standing LUMS relationships access higher-level work-based skills training.

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Table 22: Collaborative networks and partnerships addressing vital challenges

Collaborative initiative	Period	Role
Berkeley Innovation Forum	2012-2020	Provides insights on innovation challenges confronting global companies and responsive strategies. Network comprises selected Fortune 100 company directors with experience of managing innovation. LUMS is one of two university members.
Wave 2 Growth Hub (W2GH)	2014-2017	Oversight and management of projects across 16 English city regions, supported by Regional Growth Fund resources. Underpinned by LUMS Integrated Learning Model for SME managers.
Productivity through People	2017-2021	Collaborative training with Be the Business, BAE Systems, Siemens, and Rolls-Royce. Supports and invests in manufacturers of tomorrow and supply chains, creating high-performance workplaces.
RECIRCULATE	2017-2022	Builds capacity in Africa to translate high-quality research into products, processes and services to solve water crisis through safe, sustainable water. Network includes LU Environmental Science researchers, African researchers/businesses/policymakers.
Made Smarter	2019-20+	Part of £20m government sponsored industrial digitalisation initiative for aerospace related manufacturing sectors following Made Smarter Review . LUMS leads NW pilot with Manchester Growth Company, 5 NW Growth Hubs, BEIS, Digital and Manufacturing Catapults, NW Business Leadership Team.
Emergency Response Management (RESPOND-OR)	2019-2022	Working with natural disaster management organisations in Sudan and Indonesia to improve emergency response. Includes Indonesia's National Disaster Management Authority, Disaster Management Agency of the Yogyakarta Special Region, Humanitarian Forum Indonesia; RedR Indonesia; Nile Basin Institute; Universities of Indonesia, Gadjah Mada, Khartoum.
5G Rural Integrated Testbed (5GRIT; MANY)	2018-2022	Identify institutional voids inhibiting sustainable rural digital economy in Cumbria/North Yorkshire. Partners include SMEs, AI/Communications experts, DCMS, Ofcom, NGO.
Arctic Basecamp at Davos	2017-2020	Annual outreach event at World Economic Forum. Partners include World Business Council for Sustainable Development, Arctic Focus, Future Earth, Every Breath Matters, Krim Group, Global CCS Institute, alongside high-profile activists (Greta Thunberg) and figures from business (James

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Collaborative initiative	Period	Role
		Balsillie), politics (Al Gore) and the arts (Rainn Wilson).
Leaders in Residence	2018-2020	Provide strategic guidance on business engagement and research impact, support development of executive education and practical SME support. Comprises senior executives with experience of organisations including Siemens, GSK, Bentley Motors, Sellafield.

Our collaborations enrich the research base. Trusted relationships lead to business development opportunities which: stimulate research ideas; give access for data collection to research staff and PhD students; and support recruitment of new business clients and students. Our **61** Entrepreneurs-in-Residence (SME owners and managers) are illustrative of this enrichment. They contribute significant resources to collaborations with researchers, students and businesses and ensure our RRI approach is embedded across LUMS.

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4.3 Contribution to economy & society



Research Engagement Support led by business partnership managers, the development of engagement activity, and an inclusive staff development and Research Enhancement programme aid researchers in generating significant economic and societal impact.

High quality SME collaborations: Locally, regionally and nationally, these have significant socio-economic impact. LUMS has worked with c.6,000 SMEs across the North West of England. Our expertise in entrepreneurial and integrated learning (**Cope, Hamilton, Kempster, Gordon, Zozimo**) shaped our innovative SME development programmes. We continue to evolve these learning models (**Jack, Spring**) to ensure continuous impact. We understand SMEs' significance and diversity, enabling us to develop research-led solutions. We work directly with and through critical networks and partners to address systemic issues, such as innovation and productivity, facing this critical section of the UK economy. We provide solutions to idiosyncratic challenges at individual business level, and shape local and national policy agendas through distinctive collaborative structures involving key stakeholders.

Table 23. Examples of outcomes of LUMS Impact Programmes

Where specific data were not collected, we estimated impact based on previous track record.

Programme	SMEs Engaged	People with New Skills	New Products/ Services	New Jobs	New Business Collaborations
Creative & Digital Fusion	526	358	63	n/a	300
Lancashire Forum	137	93	17	39	93
Cumbria Forum	75	51	20	38.6	51
Made Smarter	22	22	n/a	n/a	18
Productivity through People	200	136	n/a	n/a	24
Growth Hub	5,000	3,400	600	4,108	3,400
China Catalyst	363	78	11	n/a	33
Total	6,301	4,147	711	4,185.6	3,901

Our internationally acknowledged strengths in family business (**Campopiano, Kotlar, De Massis**), leadership, management learning (**Hamilton, Kempster, Leitch; Faulconbridge, Introna**), and operations management (**Spring**) underpins interventions to support SME growth and development (Table 23) and our European Regional Development Fund (ERDF) programmes (Tables 21, 22), developed in partnership with business leaders, policymakers and NGOs (Table 23). An independent economic evaluation showed LUMS ERDF-funded programmes put £28 of

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value into the economy for every £1 of public funding (Ekosgen, June 2019, Impact Evaluation and Summative Assessment of ESIRF-funded Projects).

LUMS research impacts **diverse societal groups** through innovative channels (Table 24). Specific examples include:

Public exhibitions: **300** people attended the 2019 art exhibition *The Marketplace and I* in Lancaster, which built on research (**Higgins**) promoting social change for consumers living with disability. Information systems research *London City Parks Connected* (**Sutanto**) was exhibited at the Chartered Association of Business Schools Research Conference in 2018, welcoming 50-plus policymakers, practitioners and members of the public.

Targeted engagement events organised by LUMS Research Centres provide a base to shape agendas outside the academy. [CMAF](#) organised *Using Open-Source Software, Developments in Retailing Demand Forecasting and Machine Learning and AI*. The [Productivity Centre's](#) *Productivity Connections* series featured as speakers Phil Smith (Cisco); Mark Keese (OECD); and Sarah Hodgetts (BEIS).

Public Engagement: During the 2019 *LU Campus in the City*, **Hayes** led *Apps in the City*, engaging the public with *Mobile-Age*, an app providing older adults with information on services, volunteering opportunities, events, transport, facilities, and weather, thus reducing barriers to social participation. *Campus in the City* attracted **5,593** visitors, **96** on the day of *Apps in the City*. Online forums (increased due to Covid-19 restrictions) opened engagements such as Economics' Andrews and Brunner Lecture Series to a wider, more geographically spread audience of more than 350 participants. The 2018 *Community Voice* forum enabled c.50 members of Cumbria communities to shape local 5G development in a [5G Rural Integrated Testbed](#) project.

Evidence to Parliamentary Committees: **Stead** contributed to the 2018 Government Equalities Office [guidance](#) for employers by providing evidence to its Workplace and Gender Equality Research Programme on women's progression in the workplace. In July 2018, LUMS responded to the BEIS Call for Evidence on firm-level factors affecting productivity, drawing on extensive academic research, evidence our business engagement programmes' impact, and the findings of Productivity Connections workshops (**Spring, Hughes**). In 2020, **Stowell** presented to DEFRA on e-waste and the circular economy providing practical applications through the *UK Electrical and Electronic Equipment and Waste of Electrical and Electronic Equipment Study*. In total, seven LUMS researchers engaged with various committees.

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Table 24. Diversity and Reach of LUMS Impact Activities

Research Programme	Communities Engaged	Reach & Impacts
ELIEMENTAL (H2020) (Downs)	56 trainers engaged 1,000-plus participants from vulnerable groups to co-create soft-skills-based approach to learning. 800 downloads/month of free-to-download resources.	53% achieved quality employment (12-28% norm for such interventions) after 6 months. MIND to roll out nationwide project, adopted by Eden Education. Follow-on award £400k in 2019.
Fatherhood & Shared Parental Leave (Kerrane)	Fatherhood Institute, National Childbirth Trust, Working Families, BEIS.	Kerrane advised BEIS SPL policy review. Created free parental resources via Working Families website . Elements fed nationwide government campaign on SPL.
Mobile-Age (H2020) (Hayes, Introna; ISF)	300-plus older adult volunteers, South Lakeland District Council, Age UK, Red Cross and Age Platform, Alertacall, European Parliament, UK MP.	Reached Town, District and County Councils, MEPs, NHS. Six policy briefings accessed 5,000-plus times. Alertacall piloting app in South Lakes Housing, plan to expand across UK. Featured on regional national & international radio, TV, press.
Improving Radiotherapy Treatment Planning (Ehrgott).	Rosemere Cancer Centre, Leeds St James Hospital, doctors, radiotherapists	Algorithm and software adopted by Lancashire Teaching Hospitals.
Role of central banks in monetary and financial stability (Ioannidou, Goncharov, Schmaiz)	Bank for International Settlements (BIS), European Commission, International Monetary Fund, World Bank	Shaped German Council of Economic Experts policy; European Parliament DG for Internal Policies, Governor of Reserve Bank of India, BIS, European Central Bank, IMF, World Bank Group.
Stress and Info. Tech at Work (Tarafdar)	Tarafdar on DCMS Digital Skills Research Working Group, Nestlé UK – c.2000 managers. 30 companies via Unplug, including Google.	Organisational policy change (Nestlé). Shapes Google's wellbeing app design.
Open Strategizing: Expats developing business in China (Demir)	120 Swedish expats in Hong Kong	Working with Swedish companies to support collaboration, exchange and market penetration in China
Decision Analytic Framework to Explore the Water-Energy-Food nexus (Tsionas)	UN Sustainable Development Solutions Network; local African stakeholders; Government Institutions	Transforming water usage, and food and energy production in Omo-Turkana and Zambezi River Basins

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Research Programme	Communities Engaged	Reach & Impacts
Surveillance technologies and fostering innovative deforestation control policies in Brazilian Amazon (Vurdubakis)	Federal University of Minas Gerais, Brazilian Government, Brazilian NGOs	Led to “Operation Panopticon”, preventative deforestation reduction initiative, a showcase of innovation within Brazilian Ministry of the Environment.
National Parks (Truch, Sutanto)	National Park City Foundation, Greater London Authority	Establish National Park City Foundation, contributing to: Designation of London as world’s first National Park City, £12m Greener City Fund and promotion of NPC principles in London Environment Strategy.
Sustainable development in Marginalised Rural Communities (McKeever, Discua Cruz, Jack, Anderson; Pentland)	Local stakeholders in marginalised areas of UK, Ireland, Honduras and Finland; British Crafts Council, Heritage Crafts Association, Crafts Council Netherlands, Dutch Centre for Intangible Cultural Heritage	180 Entrepreneurs in County Donegal, and c.100 Honduras families; supporting entrepreneurship policy initiatives internationally

LUMS research makes significant impact locally, regionally, nationally and internationally.

Local Enterprise Partnerships (LEPs): When the UK Government tasked LEPs to develop Local Industrial Strategies reflecting place-based economic opportunities/priorities, Lancaster worked with Cumbria and Lancashire LEPs, the Centre for Nuclear Excellence and LUMS Engagement Office: all with interest and expertise in innovation ecosystems. Lancaster’s directed ESRC Impact Acceleration Account (IAA) matches funding to support innovation strategy co-development across LEPs, aimed at revitalising the region, strengthening and extending business links, and generating a deeper understanding of LEP needs. LUMS researchers (**Ford, Mason, McKeever, Larty**) engage with the NP11 group of LEPs across the Northern Powerhouse and external research partners to develop ground-breaking ecosystem value management approaches for rural towns across the UK. This connects Town, City and District Councils in collective innovation and regeneration.

National Government engagement: LUMS researchers shape evidenced-based, expert-informed implementable policies for the social good (Table 25).

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Table 25. Illustrative Research for UK Government

Research	Lead Researcher	Gov. Dept.	Impact
Social and Economic Impact of Gambling Industry	Downs	Lords Select Committee	Informed House of Lords Select Committee report
Valuing Your Talent	Hesketh	Cabinet Office	Global multinational corporations and asset managers. US SEC and Congress policy adoption
Global Islamic Finance and Investment Group annual meeting	Izzledin	HM Treasury/ House of Lords	Informed debate on macroeconomic conditions in Islamic finance market after oil price drop, and Islamic banking and finance in 21st century
Open Innovation Practice	Mason & Ford	Cabinet Office	Developed processes across Whitehall to inform policy-making with academic insight
Business Models for 5G	Mason	Dept of DCMS	Developed use case business models to support the case for investment in 5G market infrastructure in North West rural communities
5G Market Infrastructures	Mason	Dept of DCMS	Developed an inclusive citizens project for 5G rural market infrastructures to identify needs and shape technology placement for socio-economic flourishing
Manufacturing Productivity	Spring	BEIS, Cabinet Office	Informed BEIS report on Business Productivity Review, 2019
Relationship between HE and UK undergraduate earnings	Walker	DfE; HM Treasury; Cabinet Office	HM Treasury lifted home student HE numbers cap

This diverse and inclusive engagement enriches our research environment, drives activities within the faculty, University and with external partners, and delivers impact from research excellence.

Unit-level environment template (REF5b)**4.4. Looking ahead**

The challenges of rebooting the post-Covid economy and society, Brexit, the Northern Powerhouse and the “levelling-up” agenda, stimulate new opportunities with which we are well-placed to engage. LUMS is ready to embrace its role as a leading Civic Management School, continuing to successfully engage with SMEs and other key stakeholders to responsibly tackle the Grand Challenges of organisational performance & good work, productivity, and sustainability. We are directing additional resources to address these global concerns by:

- Securing corporate and applied research investment;
- Generating executive and professional development income, student internships, and career placements;
- Prioritising opportunities such as UKRI’s Strength in Places Fund, the UK Shared Prosperity Fund, and the UK Government’s successor to ESIF following the UK’s departure from the EU.

Growing our research significance in these areas will sustain and widen our collaborations and contributions to the research base, continuing to build our management research legacy and delivering impact and engagement regionally, nationally and internationally.