Unlocking Value in Life Sciences

Part 2 – Amplifying Growth & Unlocking Funding in UK Life Sciences

May 2025

Contents of this report

Foreword

Sharon Todd
Chief Executive Officer
SCI

This report represents the second half of a series of critical and timely research carried out by SCI and LEK consulting into the UK's life sciences sector.

Part One, published in March this year, focused on the issue of the UK's declining competitiveness in life sciences. It highlighted how a decade of inadequate industrial policy has caused the UK to fall down the global league tables – resulting in a £15bn p.a. gap in GVA in the sector.

Whilst these findings are concerning, the trend can be reversed. The UK has superb scientific research capacity, world-leading data assets and immense potential for spin-out and scale-up. A long-term strategic approach to industrial policy, which builds on the competitive advantages of the UK's scientific ecosystem and offers appropriate support throughout the development lifecycle, could be transformational and present great benefits for our economy.

Now, in Part Two of our report series, we explore the great potential of the UK life science sector to amplify growth and unlock that economic growth.

For example, we unpack how broadening research access to existing sovereign assets, such as the UK Biobank and NHS datasets, could contribute more than £11bn p.a. in GVA to our economy. We also explore how matching the UK's strategic strengths in life sciences through the planned Mansion House pension reforms could accelerate sector growth – boosting GVA by a further £7-10bn by 2030. But we also call for Government to reduce the VPAG 'hidden tax' imposed on pharmaceutical companies to a globally competitive level, and to review and update the NICE pricing mechanisms for new medications both to improve health outcomes for patients by ensuring new medicines are developed and delivered in the UK.

Part One of this research series was a warning to the government as the fundamentals must be in place. Part Two is a call to action. We cannot afford to miss these opportunities while our brightest minds and most promising start-ups move overseas to competitor jurisdictions better set-up to support them.

Government must act urgently and decisively to unlock the potential of our life sciences sector, before it is too late. Recent policy announcements by other countries underline the vulnerability of the UK in this global market and highlight the need to act with urgency to nurture and grow the sector in the UK.

I would like to acknowledge the critical input from the extensive engagement of SCI member organisations and senior executives, and to the Science and Investment Advisory Forum, whose advice and guidance has been invaluable.

LEK™

New opportunities: amplifying growth in the UK Life Sciences Sector

This report series "Unlocking Value in the Life Sciences" – authored by L.E.K. and commissioned by SCI® -– explores opportunities for **future economic value creation** in the UK Life Sciences Sector.

In Part 1 of this report, we focused on **characterising the international competitiveness** of the UK Life Sciences sector across multiple dimensions.

Specifically, the work highlighted that – whilst the Life Sciences sector is a critical contributor to the UK economy – it has, in recent years, suffered from apparent decline in several key measures, which together suggest **an estimated c.£15bn p.a. gap** in GVA to the UK economy emerging over the past decade. This gap has arisen because of declines in (i) the UK's global attraction of Foreign Direct Investment, (ii) the UK's share of global pharmaceutical exports, (iii) the UK's pharmaceutical manufacturing sector, relative to the European average, and (iv) the UK's share of global clinical trial activity.

In this report – Part 2 – we explore a targeted set of potential opportunities to **enhance future growth**, drawing on key future trends in the UK Life Sciences sector. The report discusses:

- Opportunities to better leverage the **UK's unique data assets** to drive better healthcare outcomes and economic value creation. Across both the UK biobank, and the promise of the broader NHS dataset, the UK has access to unique data assets that, with action, could deliver significant benefit.
- The potential to enhance economic and healthcare outcomes by revising the **pricing and access** environment in the UK.
- Enhancing **access to Scale Up capital** in the UK, in particular for the Life Sciences Sector. The Mansion House reforms – in driving consolidation of pension funds in the UK environment – offers the potential to unlock £80bn of investment in high-growth opportunities in the UK environment. Life Sciences companies are well represented in the spin-out and scale-up economy, and may be significant beneficiaries of these reforms. However, further collaboration and action may be required to encourage greater engagement from UK Venture Capital in R&D intensive industry vs the US.

Each of these three areas – in different ways - speaks to mechanisms for enhancing **value creation through innovation** in the UK Life Sciences economy: by enhancing the UK's use of **healthcare data** (particularly in the context of the growing capability of ML and AI), encouraging greater **collaboration and innovation** in the pharmaceutical sector, and creating a more attractive environment for the UK's **start-up community** in the Life Sciences sector to scale and create value within the broader UK economy.

Targeted action from all Life Sciences stakeholders in each of these areas will play a crucial role in safeguarding the future health of the UK Life Sciences Sector.

To amplify growth in the sector, there is an opportunity for the UK to leverage its sovereign assets, critically evaluate drug pricing mechanisms and access incremental funds unlocked from pension reforms

Leveraging the UK's key data assets to amplify growth

- Data offers the potential to revolutionise healthcare, driving better decision making, patient outcomes, efficiency, and economic value creation.
- Across both the UK Biobank, and the potential of the NHS datasets, the UK has access to significant life sciences data assets
- Whilst these assets have significant potential, action is required to maximise their value; data must be consolidated, infrastructure developed, secure access enabled – with appropriate safeguards – all whilst ensuring high levels of public trust
- Drawing from various estimates of the economic value creation potential of these assets, the UK Biobank and NHS dataset's could contribute up >£10bn p.a. in GVA to the UK economy

Better aligning health and business priorities for pricing and access

- Medicines pricing necessarily involves navigating complex trade-offs between ensuring affordability, providing breadth of access, rewarding innovation and encouraging investment
- In the UK, focus on cost effectiveness has yielded a system that spends less on medicines than many international comparators
- Partnership between industry and government is critical; the attention from the pharmaceutical sector on the significant impact of the Voluntary Scheme for Branded Medicines, Pricing, Access and Growth (VPAG) and on Quality-Adjusted Life Year (QALY) on their businesses, highlights the urgent need for revisions that provide longer term stability and balances affordability, access, reward for innovation and economic growth

Delivering greater funding and scale-up capital

- The UK start-up ecosystem suffers from a lack of access to scale-up capital
- This particularly affects the Life Sciences sector, which enjoys particularly high spin-out and start-up activity
- The Mansion House reforms, and the related founding of pension 'megafunds', provide an opportunity to direct funding into the UK start-up ecosystem, with the potential for significant economic value creation
- Were incremental funds resulting from the Mansion House pension reforms allocated to Life Sciences scale-up companies, we estimate the incremental annual GVA could be c.£7-10bn by 2030

Maximizing the potential of the UK Biobank, NHS datasets, and Mansion House pension reforms could generate £18-21bn annually for the UK economy, while a pricing and reimbursement system that ensures patient access and incentivizes investment could further strengthen the Life Sciences sector

LEK™

To accelerate growth in the UK Life Sciences across data, pricing and access, and the availability of scale-up capital, the following actions should be considered

Potential Actions to be Considered …

Leveraging the UK's key data assets to amplify growth

- Developing a **data strategy** that focuses on delivering UK economic and healthcare value creation
- Driving **consolidation** of existing UK health data assets access under a single framework
- Tackling **data fragmentation** by considering the role that general practitioners play as stewards of patient data, vs a centralised model
- Delivering appropriate, **secure environments** where centralised data can be readily accessed, whilst maintaining security and ethical checks
- Streamlining **data access** processes, whilst balancing the need for maintaining appropriate security and ethical checks on access and use
- Integrating **data infrastructure** with **clinical / delivery** infrastructure, developing **innovation hubs** for specific, focused therapeutic areas
- Continuing to ensure **high public understanding** of the importance of data in the enhancement of health outcomes
- Maintaining transparency and **public trust** through robust communication, particularly in regards to concerns around privacy and consent

Better aligning health and business priorities for pricing and access

- Review the **competitiveness of the NICE economic evaluation frameworks**, and their impact on access to innovative medicines and the UK economy
- Evaluate the **effectiveness of QALY thresholds**, which were set in 1999 and have never been raised
- Ensure VPAG is set to a **competitive level**
- Consider **innovative pricing approaches** for companies that show a broader commitment to investment in the UK's Life Sciences sector

Delivering greater funding and scale-up capital

- Driving the **Mansion House** reforms - and consequent consolidation - of the UK pensions landscape through to conclusion
- Diagnose the **root causes of relative underperformance** of the UK Life Sciences Sector in the deployment of Venture Capital
- Driving greater collaboration between academy and industry to encourage UK venture capital **engagement in more R&D intensive sectors**
- Continuing efforts to cultivate the **domestic specialist skillset** required to invest and operate R&D intensive industry
- Encouraging greater levels of **collaboration between Government, the Academy, and Industry**, to help unlock greater levels of investment

LEK™

The UK's key data assets have significant potential to be used to enhance both economic value creation and healthcare outcomes in the UK today

Leveraging the UK's key data assets to amplify growth | Aligning health and business priorities for pricing and access | Delivering greater funding and scale-up capital

- The UK has **multiple sovereign assets, such as the UK Biobank and NHS**, which hold significant value for research and development activities; however, currently these assets are not fully commercialised and therefore do not realise their full potential in attracting investment
- The UK Biobank is an invaluable dataset today for **non-commercial research**; however, there exists an opportunity for it to be **more directly commercialised** by pharmaceutical companies to drive additional economic benefit
  - in general, high-quality biobanks provide pharmaceutical companies with access to a toolbox that **reduces the cost of research, enhances speed to market, and enables strategic partnerships** across institutions and companies
  - by making better use of this asset, whilst ensuring the founding objectives of the UK Biobank are respected, the UK may **strengthen its position in life sciences and health innovation, and drive increased investment in the UK life sciences economy**
- The NHS also holds untapped potential in its **vast dataset with its patient records covering the entire UK population;** investing time and resources to curate the NHS dataset may result in operational savings for the NHS, improved patient outcomes, and downstream economic benefits to the UK

Were the UK to leverage its sovereign assets to amplify growth in the Life Sciences sector, the annual economic impact is estimated to be >£10bn

LEK™

As well as enhancing health outcomes, healthcare data is powerful in driving economic value creation; it reduces costs of research, enhances speed to market for novel therapies, and drives partnership

Reducing cost of research

- **Preclinical / clinical research:** health records may support virtual or in silico trials, lowering costs associated with physical trials
- **Epidemiological studies:** population data can be leveraged to conduct disease prevalence and outcomes studies
  - allowing researchers to avoid the cost of conducting longitudinal studies themselves
- **Data integration tools:** software developers can leverage biobank data for algorithm validation to create data analytic platforms

Enhancing speed to market for novel therapies

- **Drug development:** companies can identify drug targets faster by leveraging the dataset's genomic and phenotypic information
  - may allow companies to bypass initial data collection and preliminary studies
- **Diagnostics and precision therapies:** identification of biomarkers associated with specific conditions to develop diagnostic tools
  - supports earlier detection and treatment, leading to a reduction in healthcare costs
- **AI and ML models:** provides a dataset which may be used for training models in disease prediction / treatment optimisation

Enabling effective strategic partnerships

- **Collaborative research:** dataset enable academia and industry collaborations by supporting joint projects
- **Alliances across pharmaceutical companies:** companies can leverage the biobank data to cross-validate research findings
- **Best practices implementation:** The UK biobank specifically can serve as a benchmark of excellence for the development of other biobanks, enabling standardisation of sample collection methods, storage, and dissemination

Source: Rogers et al., (2011). JNCI Monographs; L.E.K. research and analysis

LEK™

The NHS contains a vast amount of healthcare data; however, efforts to consolidate datasets and enhance data quality are required to unlock its full potential

The NHS contains a vast amount of healthcare data across multiple sources

- With over 60 million registered patients, the NHS has access to one of the **most comprehensive healthcare datasets** globally and may serve as an invaluable dataset for Life Sciences companies
  - The NHS manages **>55 million primary care records**, stored at GP surgeries, alongside **>23 million secondary care records** held by hospital trusts
  - It also contains a **growing number of genome sequences**, which are highly valued for research activities

Despite the wealth of data, the NHS health data ecosystem remains fragmented

- However, the datasets are **currently fragmented**, which limits cross-linking, and accessibility for research-use
  - Currently datasets are **stored across a variety of settings** (e.g., GP practices, NHS Trusts, local authorities), with no single, unified patient record
  - Individual organisations **adopt variable formats and structures**, which creates challenges and in sharing and consolidating patient information

Whilst there are increasing efforts to digitalize the data, there is variable data quality

- Despite growing efforts to digitalise patient records, **legacy systems and historical records** present a significant challenge in creating a single, unified patient record
  - Older patient records **remain in paper form** requiring manual integration
  - Records vary in **structure, completeness, and accuracy**, making reliable data utilization difficult
  - While most modern patient interactions are captured digitally, the **extent of historical digitalization remains unclear**, affecting long-term patient histories

Source: EY, (2019). Realizing the value of health care data: a framework for the future; L.E.K. research and analysis

LEK™

The UK Biobank contains the world's largest set of sequencing data, coupled with longitudinal healthcare data; it is an invaluable toolkit for research for the world's scientific community

UK Biobank contents

	Type of data	# Participants* (k)	Data collection date
Questionnaire and interview	• Sociodemographic data	500	2006-10
	• Family history and early life	500	
	• Psychosocial factors	500	
	• Lifestyle	500	
	• Medical history	500	
	• Cognitive function	500	
Physical measures	• Blood pressure	500	2006-10
	• Hand grip strength	500	
	• Anthropometry, spirometry	500	
	• Heel bone density	500	
	• Arterial stiffness, hearing test	200	
	• Cardiorespiratory fitness	100	
	• Eye measures	100	
Web-based questionnaires	• Diet	210	2011-12
	• Cognitive function	120	2014
	• Occupational history	120	2015
	• Mental health	150	2016
	• IBS	150	2017
Enhancements	• Physical activity monitor	100	2013-14
	• Biochemistry markers	500	2006-10
	• Genotyping	500	2008-10
	• Multi-modal imaging	100	2014-22
Electronic medical records	• Death registry	44	2006 – current
	• Cancer registry	79	1971 – current
	• Hospital in patient data	400	1996 – current
	• Primary care data	230	Birth – current

- A leading biomedical database, the UK Biobank contains the genetic and health information of 500,000 UK participants aged between 40 and 69, who were recruited between 2006 and 2010
  - as part of the initial database, patients completed questionnaires on sociodemographic, lifestyle / health-related factors and provided data on a range of physical measures
  - blood, urine, and saliva samples were also collected and stored to enable genetic, proteomic, and metabonomic analyses
- Following the initial recruitment over 2006-10, the UK Biobank has been further enhanced (e.g., by addition of eye measures, and hearing tests). Further:
  - participants also consented to follow-up through linkage to their health-related records
  - leveraging the stored blood samples, genotyping was carried out in 2008 to build the UK Biobank's genetic database
- The UK Biobank is a registered charity, founded by the UK Medical Research Council and the Wellcome Trust
  - its charitable objectives are to *"protect, preserve and advance the health and welfare of human beings and to advance and promote knowledge and education"*
  - Its data is globally accessible to approved sets of researchers who are undertake health-related research in the public interest, agnostic as to whether those researchers are from academic, commercial, government or charitable settings.

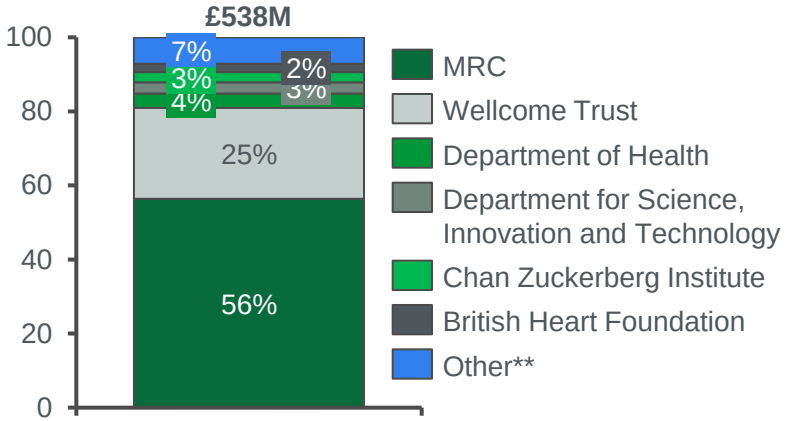
Note: *Anticipated number of participants

Source: Bycroft et al., (2018). Nature; UK Biobank Limited: Report and Financial Statements, 2024; Register of Charities, UK Biobank Limited (No.: 1101332); UK Biobank website; L.E.K research and analysis

The UK Biobank is mainly funded by its founders, the UK Medical Research Council (MRC) and Wellcome Trust, with c.60% of its funding coming from the government

Organisations funding the UK Biobank (2004-24*)

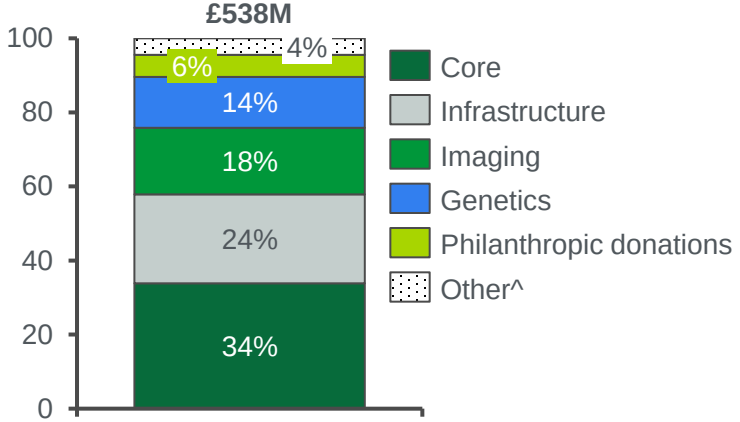
Percent



- 80% of funding has been provided by its founders, the UK MRC and Wellcome Trust
  - the MRC is primarily funded by the BEIS whereas Wellcome Trust is a charitable foundation funded by its investment portfolio
  - <10% has been directly provided by government bodies

Funding categories of the UK Biobank (2004-24*)

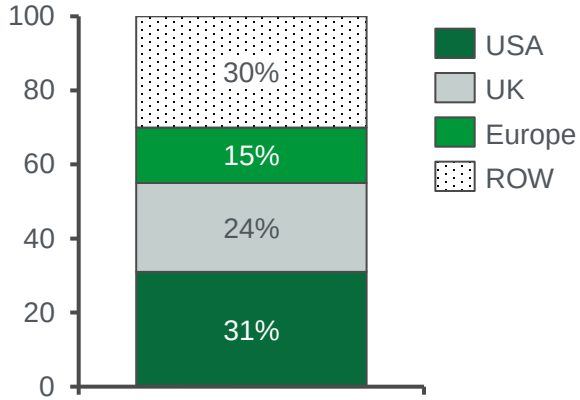
Percent



- 60% of the UK Biobank's funding was leveraged for the initial study collection, and to develop and maintain the biobank's infrastructure
  - enhancements such as the genotyping and imaging study required c.£170M of the biobank's funding

Global use of UK Biobank (2022)

Percent



- Researchers from >100 countries across the world are registered to use the UK Biobank; example studies leveraging the biobank include:
  - Protective genes against obesity / diabetes, USA (Regeneron Genetics Centre)
  - Links between social isolation, loneliness and dementia, China (Fudan University)

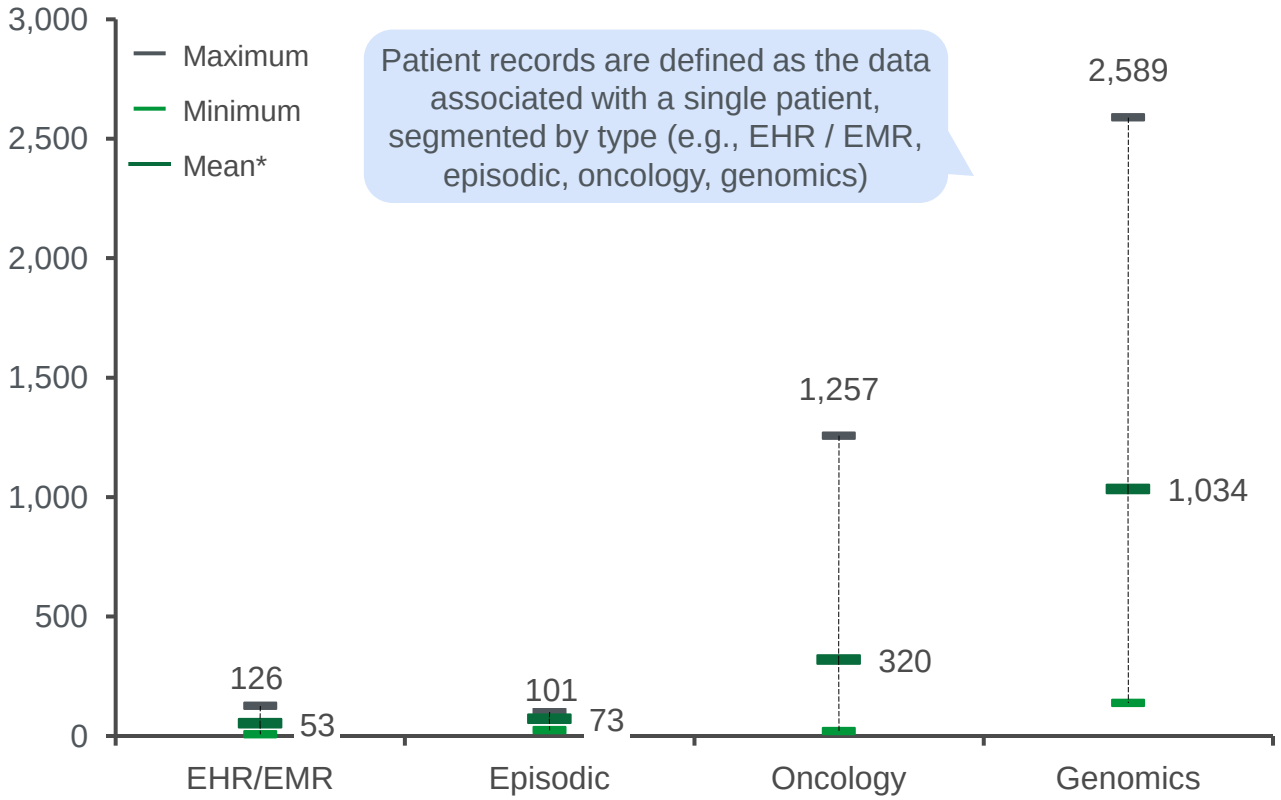
Note: *Latest as of July 2024; **Other includes, but is not limited to Cancer Research UK, NIHR, Scottish Government, Welsh Government, Diabetes UK, Philanthropic donors; ^Other includes, but is not limited to biochemistry, ethics, COVID-19 seroprevalence; BEIS: Department for Business, Energy and Industrial Strategy

Source: UK Biobank, (2024). Funding awards to UK Biobank – updated July 2024; UK Biobank, (2022). Impactful Research; L.E.K. research and analysis

LEK™

Our research on company valuation comparators indicates that genomics data has the highest value per record across healthcare data archetypes, underscoring the value of the UK Biobank

Indicative value of individual patient records by type (2022)
Pounds



- To value patient records, valuation multiples and transaction deals for companies with patient data assets were assessed
- Genomics data is critical for future drug discovery and personalised medicines, and therefore is valued higher
  - genomics data tends to be scarcer due to high sequencing costs, which further increases its value
- Additional value is created when genotypic and phenotypic records are linked as it provides in-depth data for drug discovery and population health analysis
  - EY estimates the value per record of Regeneron and GSK's initiative** to sequence samples available within the UK Biobank to be c.£2,350^
- In a survey completed by L.E.K. consulting in 2023, c.25% of pharmaceutical companies were spending >$50mn each p.a. to acquire healthcare data
  - this highlights a willingness to invest in data and services which can accelerate research and reduce time to market

Note: *Mean prices were calculated from both public company valuations over number of patient records available as well as merger and acquisition deals over patient records available giving an indicative value of patient data across different sectors; **Partnership committed the initial investment to enable sequencing of the first 50,000 samples; ^Valued at $3,000 USD in 2019, converted based on an average exchange rate of 0.7836
Source: L.E.K., (2023). Tapping Into New Potential: Realising the Value of Data in the Healthcare Sector; EY, (2019). Realizing the value of health care data: a framework for the future; UK Biobank, (2017). GSK/Regeneron initiative to develop better treatments, more quickly; UK Biobank website; L.E.K. research and analysis

As AI techniques continue to develop, the value creation potential from high-quality datasets, such as the UK Biobank, is likely to increase further, with several specific, novel Life Sciences use cases

Opportunities to enhance the value of the UK Biobank dataset using AI

Target Identification

- ML algorithms can be leveraged to analyse large datasets to identify targets for potential drugs
  - these algorithms often require gene expression profiles, protein-protein interaction networks
- The UK Biobank's biochemistry and genomics data may be leveraged to develop these models

Virtual Screening in Drug Discovery

- Biobank samples can be used alongside computational tools for virtual screening
  - simulating potential interactions between drug candidates and biological targets may enable researchers to identify promising therapies more efficiently

Developing Gene Therapies

- The growing accumulation of genomic and clinical data presents challenges and opportunities for data scientists in extracting relevant insights
- AI may be used to identify correlations that are not immediately apparent to support the identification of genetic targets for gene therapies

Prediction of Drug Toxicity

- Several drug candidates fail clinical trials due to unexpected adverse events
  - combining AI-based approaches with datasets containing chemical structures, biological pathways, and clinical data may improve accuracy of predicting drug toxicity

Disease Identification

- By leveraging large datasets (e.g., EHRs) in combination with other data sources, AI can identify and diagnose various diseases
- The UK Biobank data may be leveraged to develop accurate and reliable diagnostic models to support early treatment

Image Analysis and Phenotyping

- Deep learning tools can be applied to the medical images stored within the UK Biobank dataset
- These tools may extract phenotypic data from images to provide insights into disease progression, and improve diagnostic approaches

Source: Rehman et al., (2024). Fundamentals Research; Kinkorova and Topolcan, (2020). EPMA Journal; L.E.K. research and analysis

LEK™

Were the UK Biobank and NHS dataset's potential in supporting the Life Sciences economy fully realised, it has been estimated it could contribute >£10bn p.a. to the UK economy

UK Biobank

- The UK Biobank is one of the UK's most valuable scientific assets. It comprises a vast array of data from UK patients, surpassing other biobanks in scale and depth
- To date, >£500 million has been invested in developing the UK Biobank, primarily funded by the UK MRC and the Wellcome Trust
- Today's benchmarks of comparable datasets suggest that – were the UK Biobank used to its full potential – it would generate of the order of £0.5-1bn p.a. in economic activity to the UK across direct, indirect and induced impact

Were the UK Biobank's potential in supporting the Life Sciences economy fully realised, we estimate it could contribute up to ***c.£1bn p.a.*** *to the UK economy*

NHS datasets

- The NHS holds a vast amount of patient record data, covering the UK population from birth through to death
- Consolidating the NHS dataset into a single, accessible infrastructure would provide significant value to the UK economy, through cost savings to the NHS, enhanced patient outcomes, and broader economic / spillover benefits
- However, developing the appropriate data infrastructure and governance would require significant investment

Whilst there is great uncertainty on the overall future potential of data in the Healthcare Environment, bottom-up estimates based on value of health datasets comparators today broadly support that the NHS dataset could support incremental GVA p.a. of the order of ***c.£10bn p.a.****, a value that is approximately consistent with other publications estimating the value of NHS data to the UK economy (e.g., EY, in their 2019 "Realising the Value of Data in the Healthcare Sector)*

Source: L.E.K., (2023). Tapping Into New Potential: Realising the Value of Data in the Healthcare Sector; EY, (2019). Realizing the value of health care data: a framework for the future; L.E.K. research and analysis

LEK™

Whilst the value creation potential from the UK's differentiated data assets is significant, accessing and delivering that value will require action. Potential recommendations include:

- Developing a **data strategy** that focuses on delivering UK economic and healthcare value creation
- Driving **consolidation** of existing UK health data assets access under a single framework
- Tackling **data fragmentation** by considering the role that general practitioners play as stewards of patient data, vs a centralised model
- Delivering appropriate, **secure environments** where centralised data can be readily accessed, whilst maintaining security and ethical checks
- Streamlining **data access** processes, whilst balancing the need for maintaining appropriate security and ethical checks on access and use
- Integrating **data infrastructure** with **clinical / delivery** infrastructure, developing **innovation hubs** for specific, focused therapeutic areas
- Continuing to ensure **high public understanding** of the importance of data in the enhancement of health outcomes
- Maintaining transparency and **public trust** through robust communication, particularly in regards to concerns around privacy and consent

LEK™

Introducing innovative mechanisms and agreements to the UK's current pricing and reimbursement framework may further support patient access to medicines whilst incentivising inward investment

Leveraging the UK's key data assets to amplify growth | **Aligning health and business priorities for pricing and access** | **Delivering greater funding and scale-up capital**

- Cost-effectiveness frameworks in healthcare provide a structured approach to balancing **clinical benefit, cost, and patient access** in decision-making
  - the use of mechanisms such as Quality Adjusted Life Years (QALYs), and incremental cost-effectiveness ratios (ICERs), aims to ensure that NHS resources are allocated to treatments that **deliver the greatest health gains per pound spent**
  - countries leverage **different approaches in managing these trade-offs**, and therefore adopt **varying pricing and reimbursement systems**; the UK adopts a cost-effectiveness approach to evaluating new medicines, whilst other markets adopt clinical effectiveness or budget impact assessments
  - however, and particularly when compared to the medicines spend of other countries, there are some **notable disparities between the UK and other nations** (i.e., the UK spends significantly less on medicines as a proportion of its healthcare budget compared to other nations)
- The Voluntary Scheme for Branded Medicines Pricing and Access (VPAG) scheme seeks to **strike a balance** between the needs of business to **drive innovation, and cost effectiveness**
  - however, it has come under **criticism in recent months by the pharmaceutical sector** who cite high and unpredictable rebates payments as a significant challenge to doing business in the UK

There exists an opportunity for the UK to critically evaluate its pricing and reimbursement processes to create a system that not only ensures patients receive effective medicines but also incentivizes investments in the market, strengthening both healthcare outcomes and the life sciences sector

LEK™

Countries adopt varying approaches when evaluating new medicines for pricing and reimbursement; the UK adopts a cost-effectiveness HTA whilst others consider clinical effectiveness or budget impact

Pricing and reimbursement market archetypes

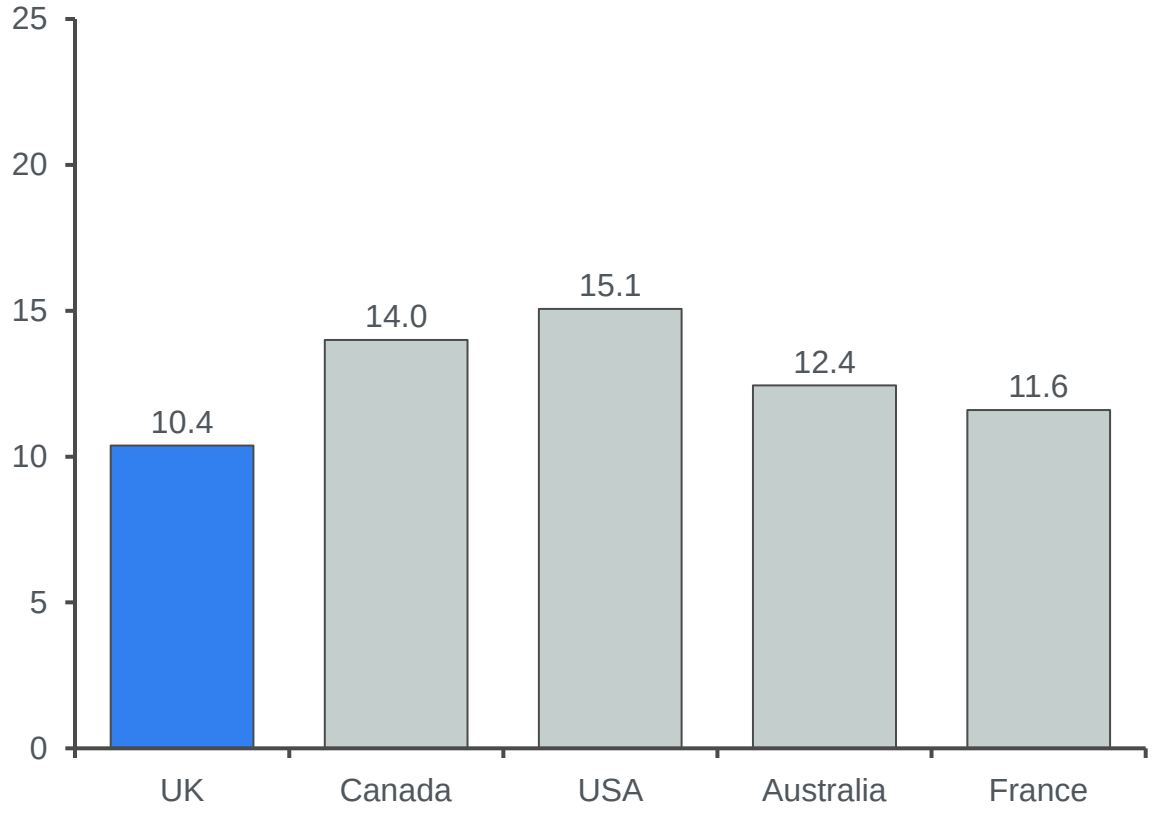
	HTA stakeholders	HTA archetype	
UK	National Institute for Health and Care Excellence (NICE)*	Cost-effectiveness	• Evaluates the economic efficiency of a medicine by comparing its costs to health outcomes • Prioritised value gained for money spent
France	Haute Autorité de santé (HAS)	Clinical effectiveness	• Focuses on the therapeutic benefits and safety of a treatment, prioritizing patient outcomes without direct consideration of cost • Outcome of HTA determines opportunity for pricing negotiations and whether the medicine can be priced at a premium to relevant comparators
Germany	Federal Joint Committee (G-BA), Institute for Quality and Efficiency in Health Care (IQWiG)	Clinical effectiveness	
Spain	Spanish Agency of Medicines and Medical Products (AEMPS)	Budget impact	• Assesses the financial consequences of adopting a new medicine on a healthcare system's budget • Prioritises affordability with reimbursement determined based on annual budgets
Italy	Italian Medicines Agency (AIFA)	Budget impact	

- There are multiple archetypes of health technology assessments (HTA) employed by markets
  - The UK, Australia, and Sweden are some examples of markets which adopt a cost-effectiveness approach when evaluating pricing and reimbursement of medicines
  - Other markets may adopt clinical effectiveness or budget impact HTAs when assessing new medicines
- Multiple markets following a cost-effectiveness approach, often refer to QALY and ICER thresholds as part of their HTA processes
  - QALYs combine the quantity and quality of life into a single metric to support the evaluation of medicines
  - An ICER represents the additional cost per QALY gained by using a new medicine compared to existing treatments; ICER thresholds are then used to determine if a medicine provides value for the money
  - Countries vary in their use of ICER thresholds, with some markets (e.g., Sweden and Australia) using it more implicitly, whilst the UK uses these thresholds more explicitly

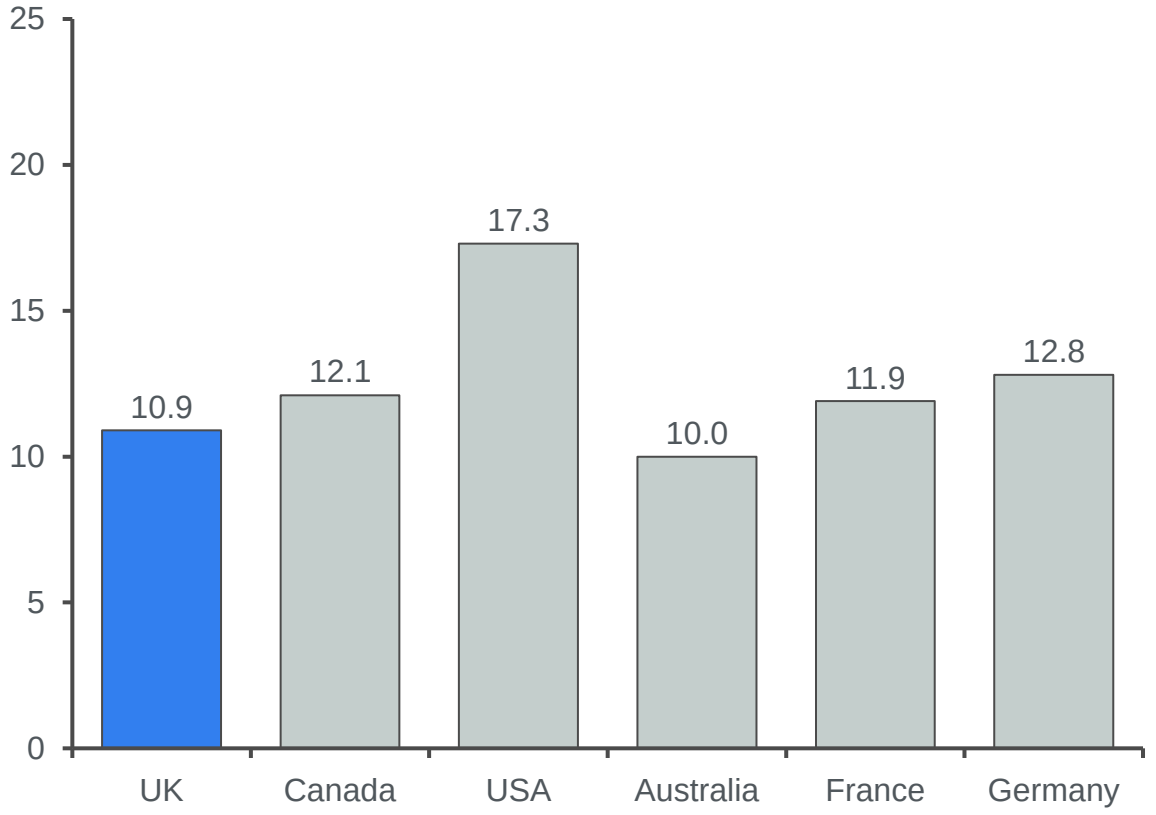
Note: HTA: Health Technology Assessment; *Scottish Medicines Consortium (SMC) for Scotland, All Wales Medicines Strategy Group (AWMSG) for Wales
Source: ABPI, (2025). Is investing in medicines harming the health of the UK population?; L.E.K. research and analysis

The UK's spend on medicine as a proportion of total healthcare expenditure and its healthcare as a percentage of GDP is lower than that of comparator countries

Medicine spend as a share of total health spending
Percent



Healthcare spend as a percentage of GDP
Percent



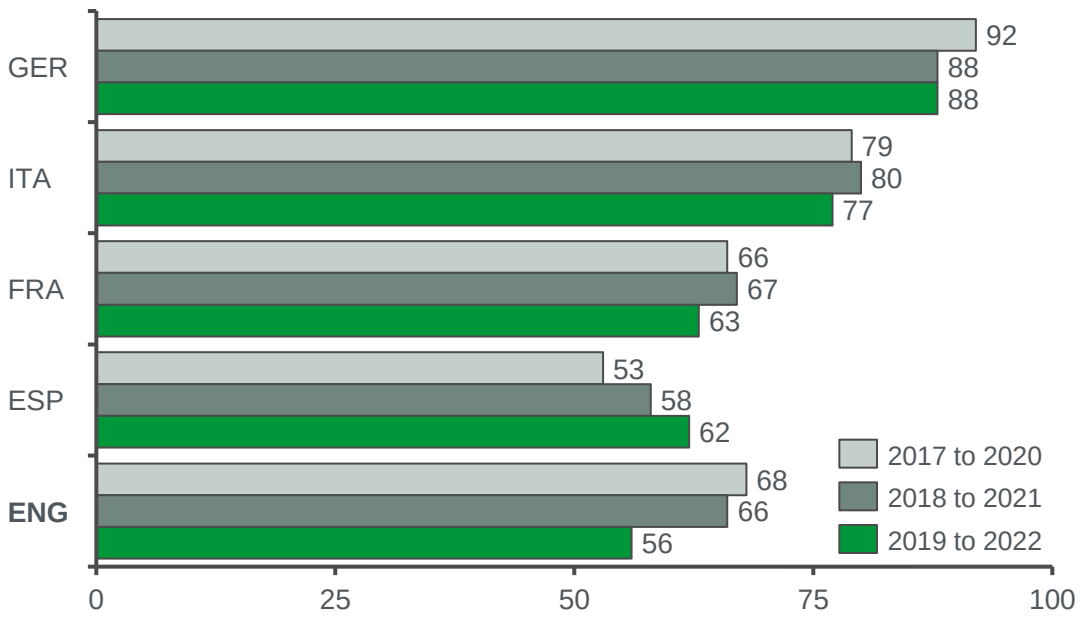
Source: ONS; Pharmaceutical Journal; Canadian Medical Association; Tichy et al., (2024). National trends in prescription drug expenditures and projections for 2024; Tanne, (2024). US healthcare spending will reach nearly 20% of GDP by 2032, predict experts; Australian Institute of Health and Welfare

LEK™

Against European comparators, England ranks low in access to new medicines and time from approval to reimbursement

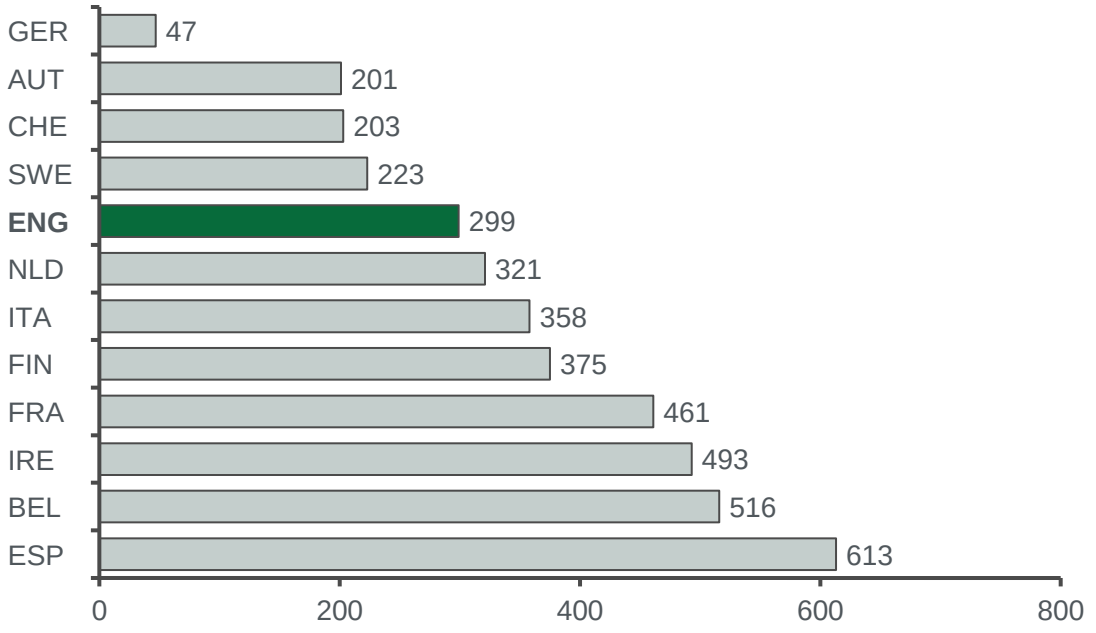
Access to new, EMA-approved medicines in England is low against European comparators, and has declined by >10ppt since 2017

Access to new medicines, by country (2017-22)
Percentage of EMA approved medicines available



The UK ranks 5th in time to medicine availability, behind other markets such as Germany, Austria, Switzerland, and Sweden

Median time to medicine availability*, by country (2019-22)
No. of days



Note: * Length of time from local marketing authorization to the date of availability to patients
Source: Life Sciences competitiveness indicators 2024: summary (2024); McDougall et al., (2020). J Mark Access Health Policy

The VPAG scheme aims to balance affordability of medicines for the NHS, promote patient access, and support industry incentives …

VPAG overview

*Five-year agreement (2024–2028) between the UK government (DHSC), NHS England and the pharmaceutical industry balancing **NHS affordability, patient access**, and **industry incentives***

VPAG objectives	Key features of the VPAG scheme
Contribute to a financially sustainable NHS	• Caps annual growth in NHS branded medicine spending at 2% (2024), rising to 4% by 2028 • Differentiated rates for newer (lower rebates) vs. older (higher rebates) medicines to balance innovation incentives with cost control
Promote better patient outcomes and a healthier population	• Accelerates NICE appraisals by reducing delays in issuing guidance for new medicines • Raises the budget impact test (BIT)* threshold from £20M to £40M • Enables pilots for value-based payment models for advanced therapies to support faster access
Support economic growth through industry incentives	• Provides rebate exemptions for innovation (e.g., new active substances are exempt for 36 months post-MHRA approval, and small companies** have reduced / waived rebates) • Creation of a joint government-industry fund, the Life Sciences Investment Facility to support clinical trials, manufacturing, and NICE capacity

- Voluntary schemes for medicines pricing have existed for nearly 70 years in the UK to manage cost of branded medicines to the NHS whilst incentivising the pharmaceutical industry to invest in the UK
- However, recent increases in the payment rate expected from industry have led to industry experts criticising the scheme due to its:
  - Unsustainably high and unpredictable rebate rates - already subject to discounting and lower than in many peer countries
  - Threats to industry growth and delayed medicine availability
  - Erosion of UK competitiveness for medicine launches

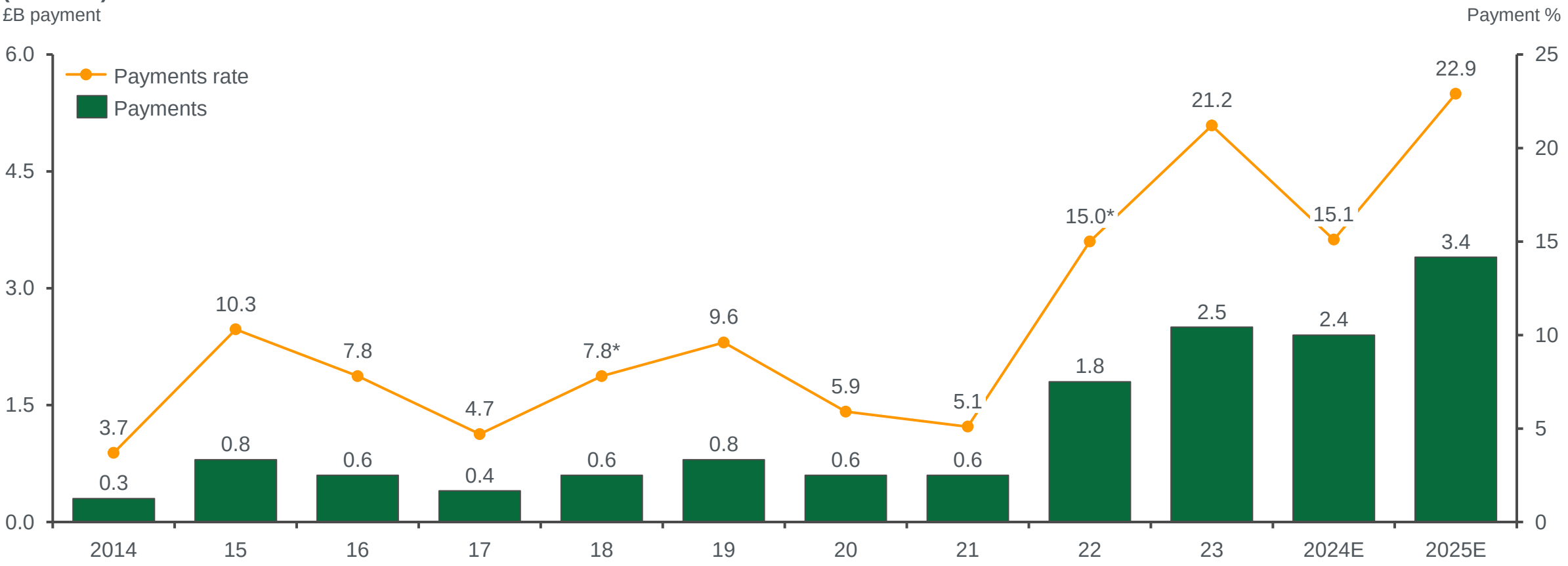
Note: *BIT is a financial cap used during NICE's health technology assessments to identify medicines that may require additional NHS budget negotiations; **Revenues of <£30M

Source: ABPI, (2025). Voluntary Scheme on branded medicines; DHSC, (2023). 2024 voluntary scheme for branded medicines pricing, access and growth: summary of the heads of agreement; EMJ, (2025). VPAG hikes put UK life sciences at risk, warns pharma

LEK™

… however, since the introduction of a cap on NHS branded medicines spending, rebate rates have risen sharply and become increasingly unpredictable

Annual and voluntary scheme payment values and rates (2014-25E)



Note: *ESR (end scheme reconciliation) adjustment assumes 'correct' payment rate in 2023 was 21.2% instead of the previously published 26.5%, 2018 Payment rate set at 7.8% and 2022 payment rate set at 15% following agreement between DHSC and ABPI

Source: ABPI, (2025). Delivering a voluntary scheme for health and growth; Annual DHSC VPAS payment reports; DHSC VPAG payment model

Industry feedback highlights a lack of joined up thinking between health and business, particularly in current approaches to drug pricing and reimbursement. Potential recommendations include:

- Review the competitiveness of the **NICE economic evaluation frameworks**, and their impact on access to innovative medicines and the UK economy
- Evaluate the **effectiveness of QALY thresholds**, which were set in 1999 and have never been raised
- Ensure VPAG is set to a **competitive level**
- Consider **innovative pricing approaches** for companies that show a broader commitment to investment in the UK's Life Sciences sector

LEK™

Despite the strength of the UK Venture Capital markets, early-stage companies in the UK suffer from a lack of scale up capital, and Life Sciences companies in particular have better access to funding overseas

- The UK's Venture Capital (VC) market is **third largest in the world**, falling second only to the US and China; the UK is comfortably the European leader in attracting VC funding, raising more in recent years than Germany and France combined
- However, **there remain gaps** in the UK's support of early-stage companies, both in terms of funding availability and sectoral focus:
  - The UK suffers from a "scale-up gap"; whilst the UK is highly competitive in delivering funding in the early stages of companies' journeys, in later stages - however – funding is less available, causing some UK-founded businesses to rely on foreign investment, or relocation to meet their growth aspirations
  - Second, in relative terms, the UK lags the US significantly in its support of Life Sciences businesses, where the US raises 1.6x more in relative terms
- Due to the **Mansion House reforms**, Pension funds now represent a potential solution. The UK has a large pension fund sector – one of the largest in the world - totalling over £2 trillion in assets under management across various schemes, supporting tens of millions of people. The sector is **highly fragmented**:
  - There are >60 multi-employer Direct Contribution (DC) schemes in the UK, and 86 separate Local Government Pension Schemes (LGPS)
- This **fragmentation is a barrier to achieving optimal returns**: it denies funds sufficient scale to allow them to participate either in (i) large scale investments (e.g., infrastructure), or (ii) investments in smaller companies, which may have more attractive growth profiles, but higher risk at the level of an individual investment
- In November 2024, as part of the Mansion House Reforms, the UK Government announced that it would seek to pass a new Pension Schemes Bill in 2025, targeting the creation of **pension "megafunds**", by consolidating the defined contribution schemes and LGPS;
- This reform aims to deliver an incremental £80bn of investment into "*exciting new businesses"*; With focus and action, t**he Life Sciences sector**, which has a high proportion of early-stage companies, could be a **significant beneficiary** of these reforms;

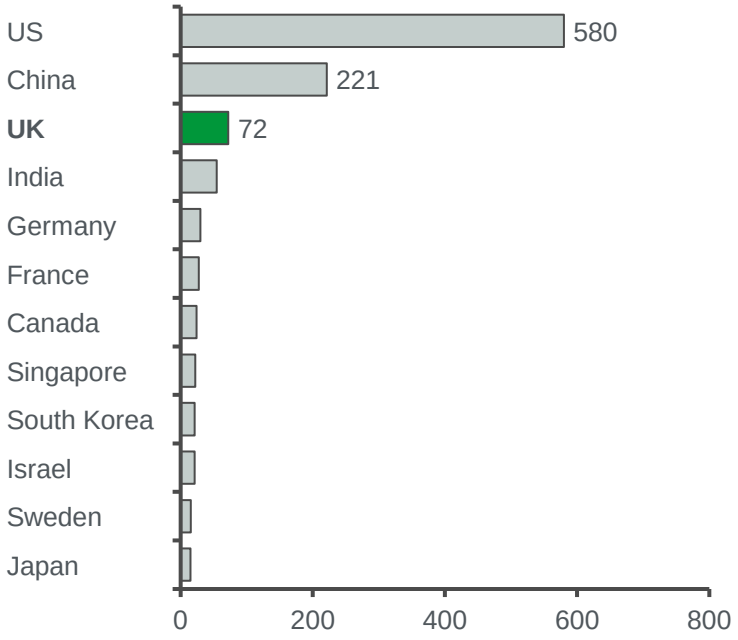
Once fully deployed, we estimate that the incremental funds made available from the Mansion House reforms could deliver an incremental c.£8bn p.a. in GVA from the activity of companies in the UK Life Sciences Economy

LEK™

The UK has a thriving Venture Capital market. It is the third largest globally, and the market leader in Europe, underpinned - in part - by world-leading universities, and a robust pipeline of "spin-out" activity

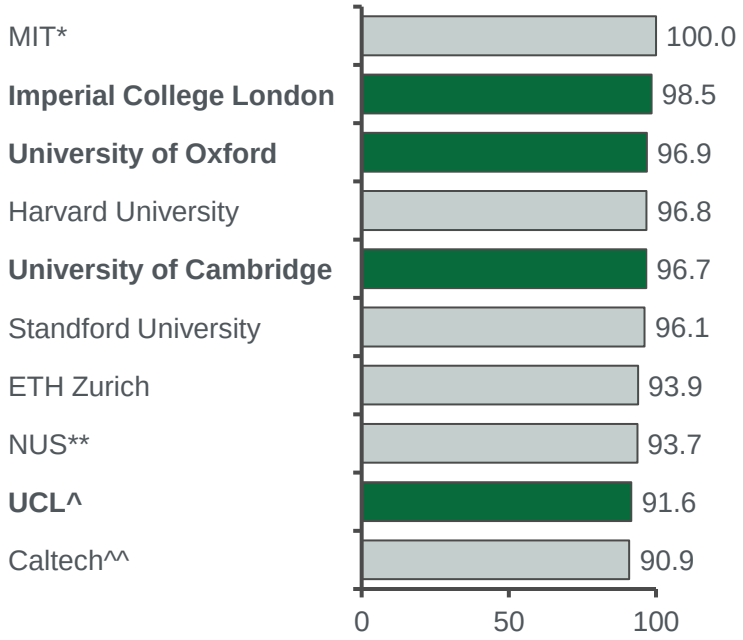
The UK is the third largest market for Venture Capital globally, and the largest in Europe …

Venture capital investment by country (2021-23)
Billions of USD



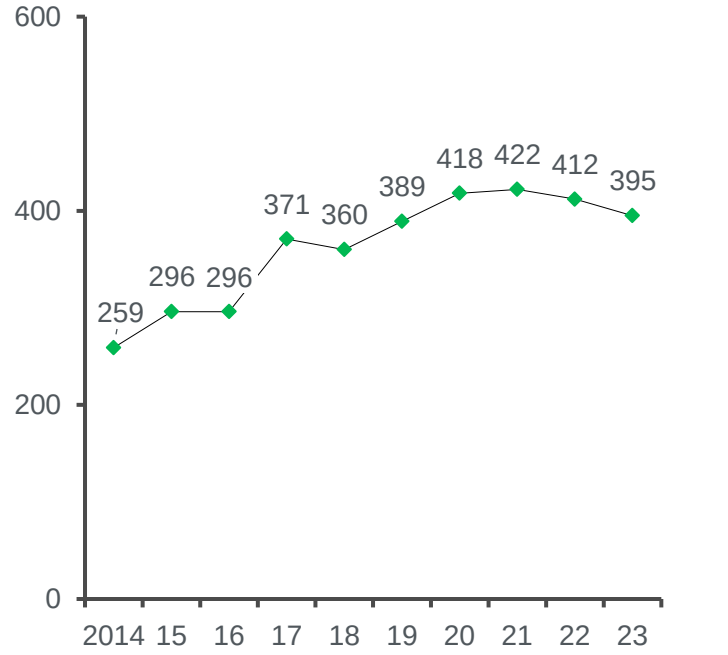
… the UK is home four of the top ten universities in the world …

QS World Top 10 Universities (2025 rankings)
Metric score



… and the number of UK university spin-outs has seen robust growth over the last 10 years

UK University Spin-outs (2014-23)
Number of deals



Source: QS World University Rankings; Stanford University Office of Technology Licensing; University of Oxford – OUI (Oxford University Innovation); L.E.K. analysis of Spinout.fyi database; OECD Government-financed R&D as proportion of GDP; Tony Blair Institute for Global Change; L.E.K. Interviews

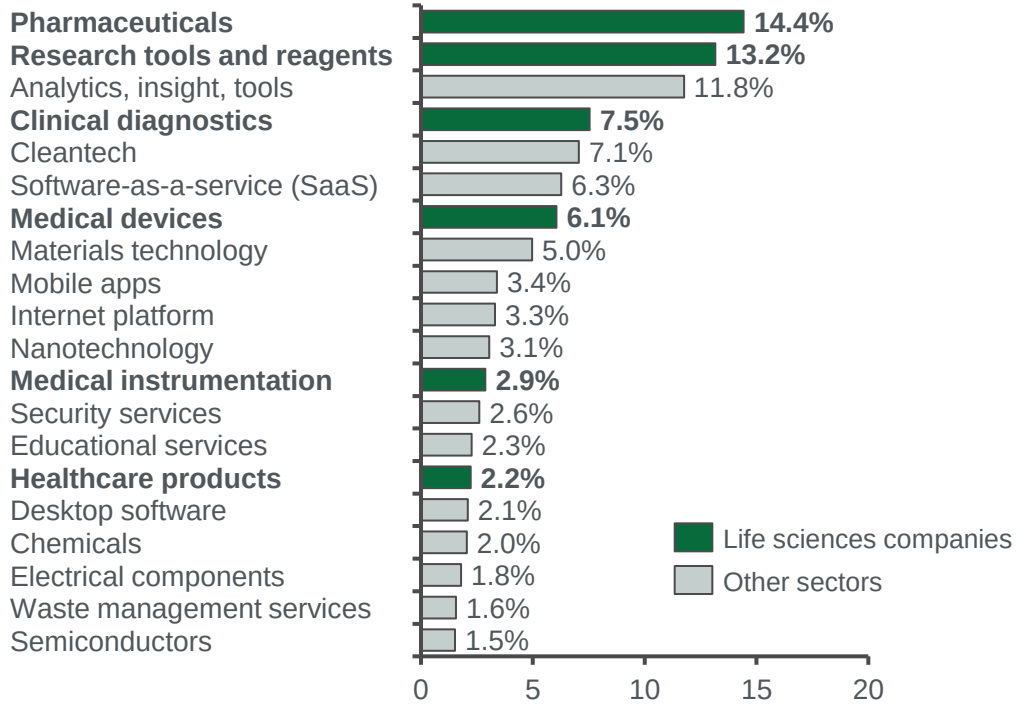
LEK™

The Life Sciences sector has strong representation across both UK spin-out and scale-up companies, reflecting the UK's strength in the academy, and historical strength in Life Science Industry

Life Sciences companies represent 46% of UK Spin-outs …

Top sectors by proportion of UK spinouts (2024)

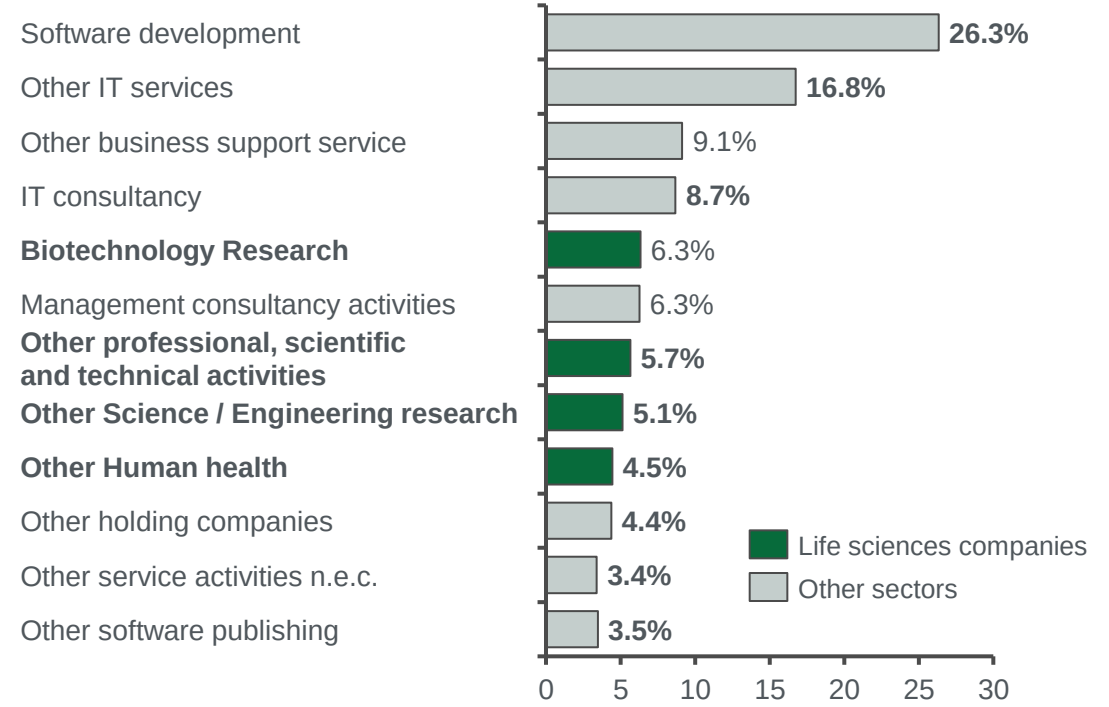
Percent



… and 22% of UK scale-up companies in the UK economy

Top sectors by proportion of UK Scale-Up (2024)

Percent

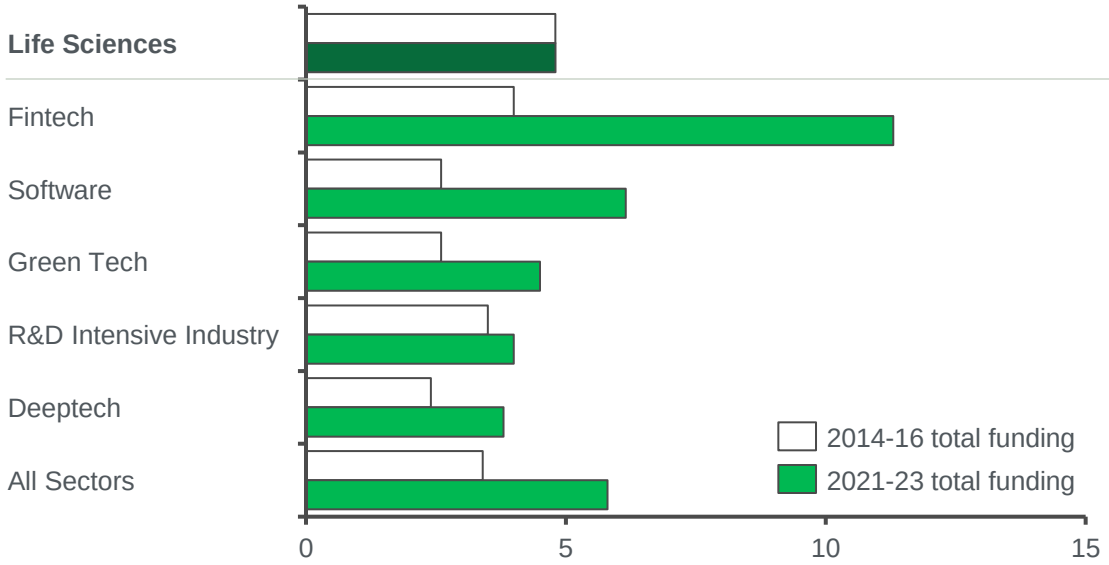


Source: Beauhurst, (2024). Spotlight on Spinouts: UK academic spinout trends; L.E.K. research and analysis

However, the UK Venture Capital markets' support of Life Sciences companies specifically shows potential challenge, particularly in its relative competitiveness against the US market, and …

Life Sciences is the only sector in Venture Capital funding where the UK has not increased its global market share over the last decade …

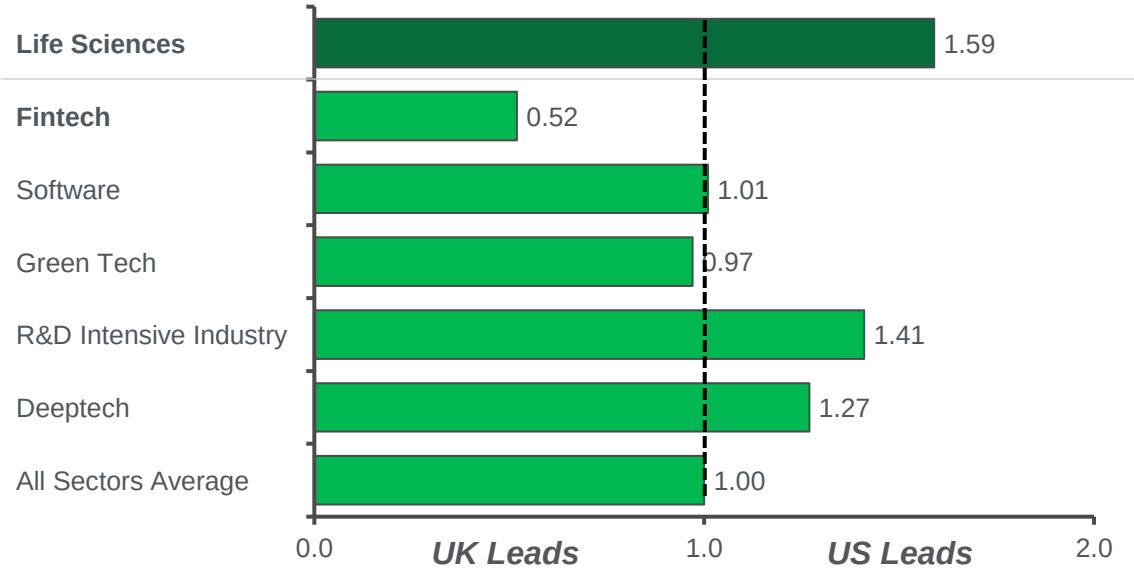
UK Venture Capital Market Share by Sector (2021-23)
Percent by Sector



The UK has increased its overall global market share, driven in particular by strength in Financial Services, where the UK has a >10% market share. However, market share performance in Life Sciences has stagnated

… and there is significant competition in Life Sciences investment from the US, which invests significantly more even in relative terms

Relative investment by sector, normalised for GDP for the US vs the UK (2021-23)
Billions of USD



Once normalised for GDP, the US invests approximately 60% more in Life Sciences ventures than does the UK, and also outperforms in a broader set of R&D intensive and specialist technical sectors

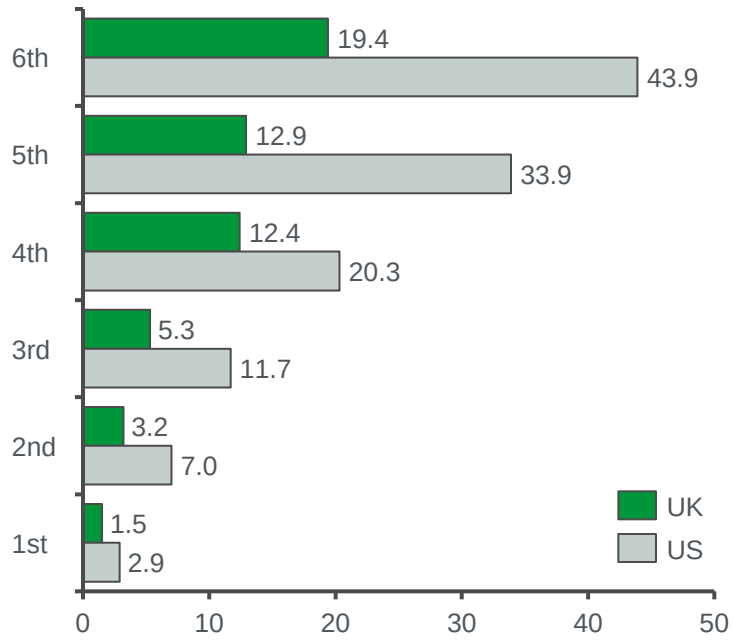
Source: Beauhurst, Analysis from the British Business Bank – Small Business Equity Tracker 2024

LEK™

… the UK market exhibits a "scale-up gap", where – relative to the US – funding in later rounds tends to be smaller and slower to realise, contributing in part to fewer unicorns per VC-backed company

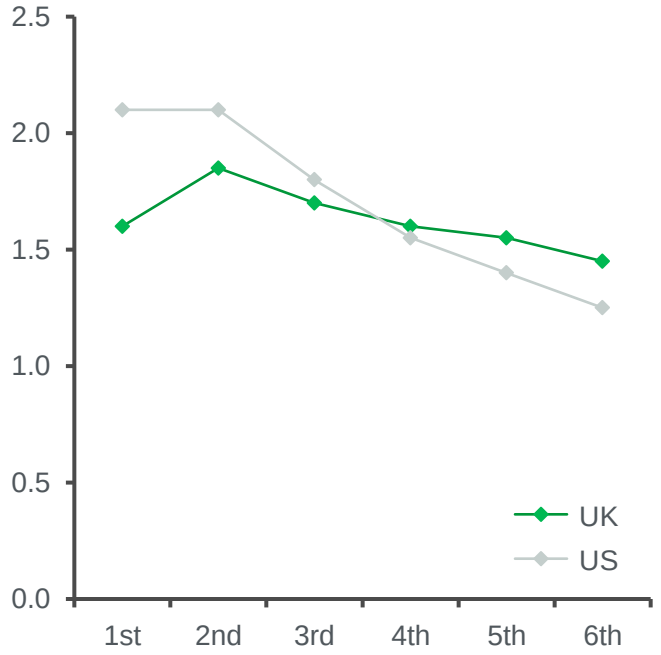
Whilst the UK is competitive against the US in early-stage funding rounds, the gap increases as businesses scale …

US vs UK: Funding-round size (First round in 2015/16)
Millions of USD



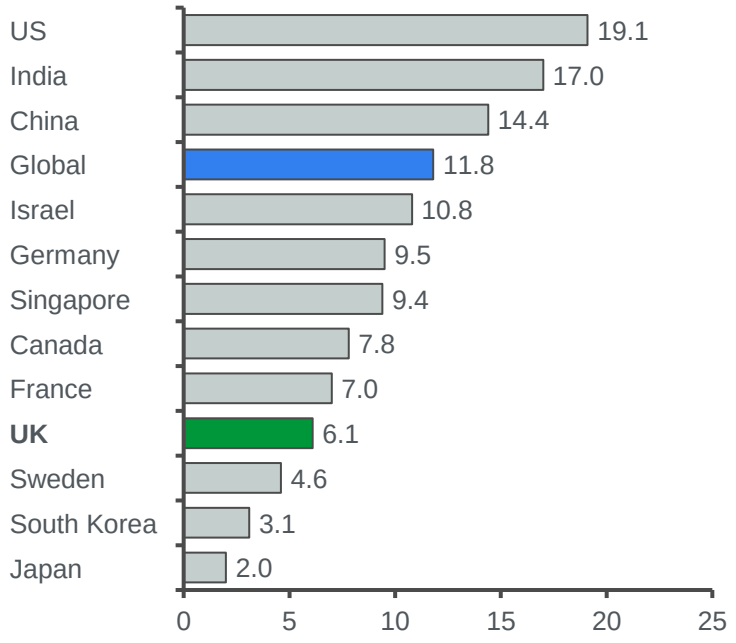
… and the length of time required to raise funds slows …

US vs UK: Average Years between VC Rounds (First round in 2015/16)
Years



… with knock on implications for the proportion of early-stage businesses that succeed to unicorn status

Number of Unicorns per 1,000 VC-backed companies (2021-23)
Number

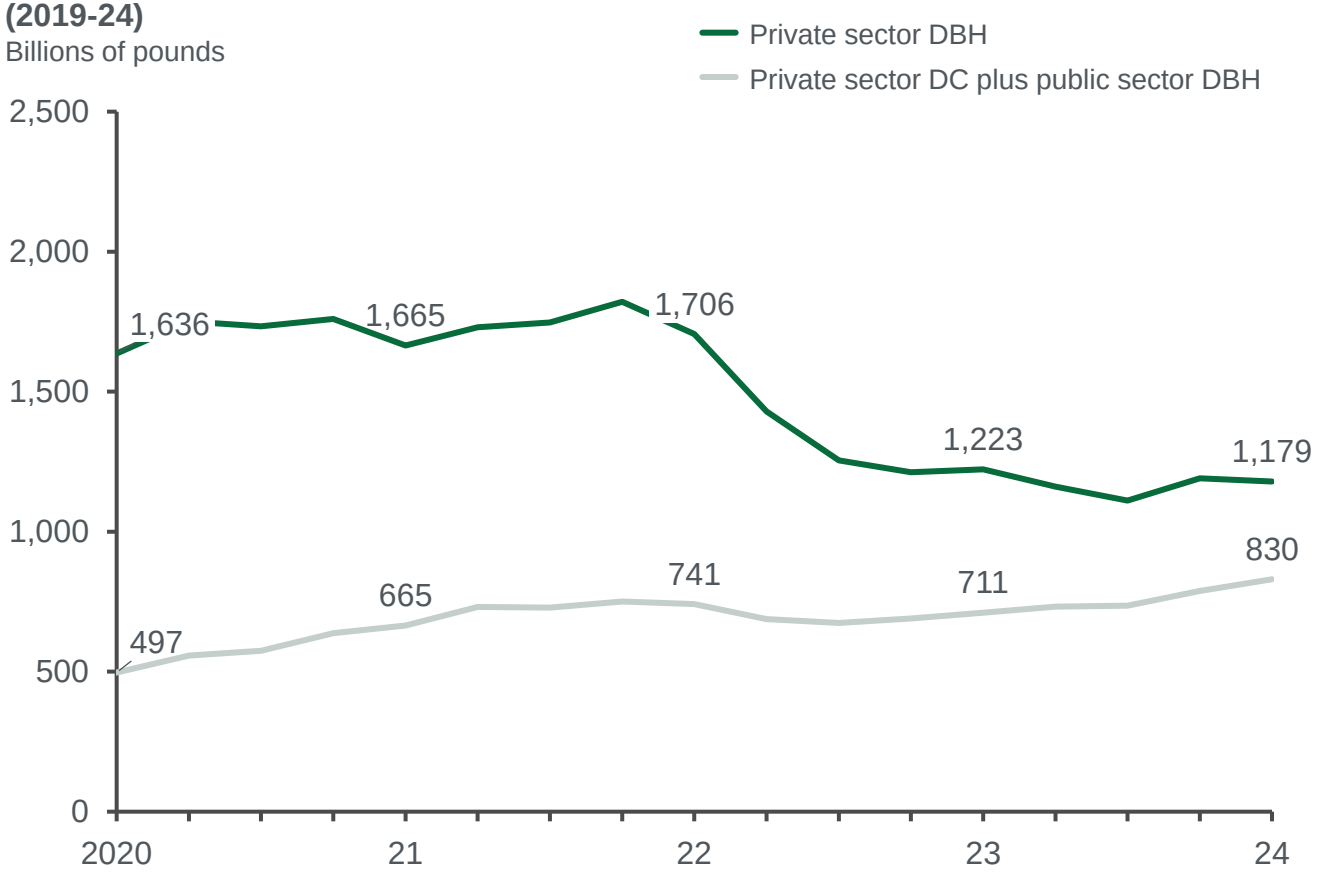


Source: Beauhurst, Analysis from the British Business Bank – Small Business Equity Tracker 2024

The UK has one of the largest pension sectors globally, with over £2 trillion of assets under management; Mansion House reforms create a mechanism for these funds better to participate in the scale-up economy

Market value of UK funded occupational schemes (2019-24)

Billions of pounds



- The market value of UK pension funds is over £2,000bn across defined contribution (DC) and defined benefit (DB) schemes
  - DC schemes and public sector DBH schemes account for c.40% of the total market value of UK pension funds
- The UK pension landscape is – however – highly fragmented. This fragmentation serves as a barrier to achieving optimal returns, preventing funds from having sufficient scale to allow them to participate either in:
  - large scale investments (e.g., infrastructure), or
  - investments in smaller companies, which may have more attractive growth profiles, but higher risk at the level of an individual investment
- In November 2024, as part of the Mansion House Reforms, the UK Government announced that it would seek to pass a new Pension Schemes Bill in 2025, targeting the creation of pension "megafunds", by consolidating the defined contribution schemes and LGPS
- These megafunds, with assets from £25-50bn and above are expected to deliver an incremental £80bn of funding, which can be targeted at UK scale-up businesses

Note: * Defined as schemes with two to 11 members

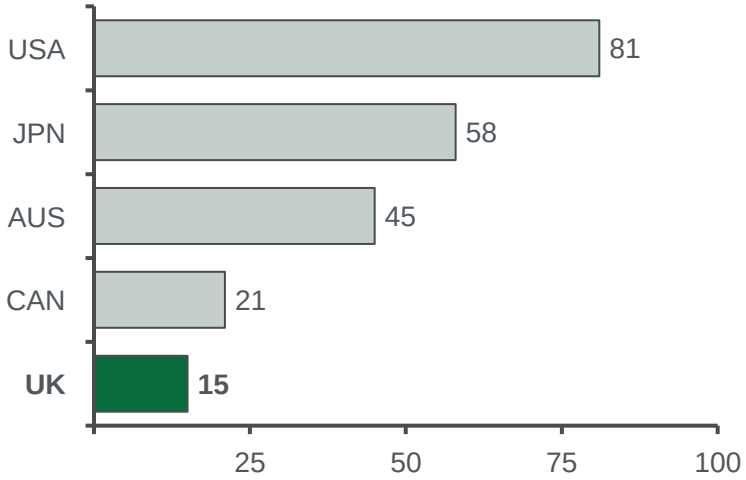
Source: The Pensions Regulator, (2023). Occupational defined contribution landscape in the UK 2023; The Pensions Regulator, (2024). Occupational defined benefit landscape in the UK 2024; ONS, (2024). Funded occupational pension schemes in the UK; Mercer; Tony Blair Institute for Global Change, (2023). Investing in the Future: Boosting Savings and Prosperity for the UK; L.E.K. research and analysis

LEK™

Today, UK DC schemes allocate lower capital to domestic equities and private equity compared to international comparators, with domestic exposure of capital declining over time

Allocation of domestic equities in DC pensions (2024)

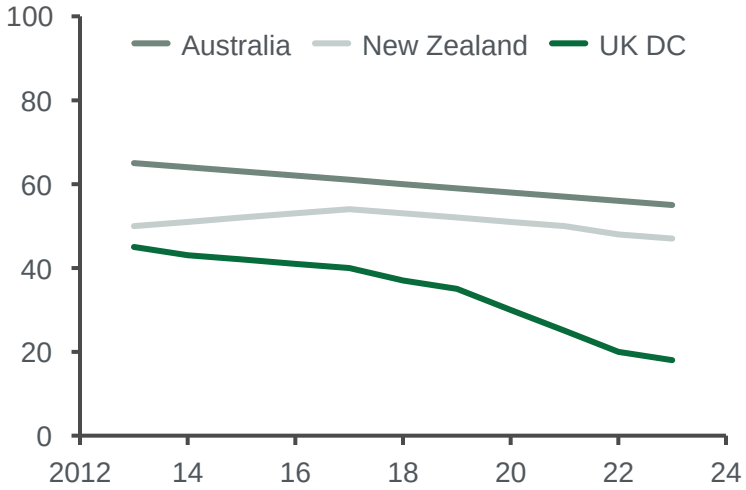
Domestic equities as a % of all equities



- Whilst c.55% of UK DC pension capital is allocated to listed equities, only c.15% is allocated to domestic listed equities
  - this places UK at the lower end when compared to other markets

Total domestic allocation* of pension funds (2013-23)

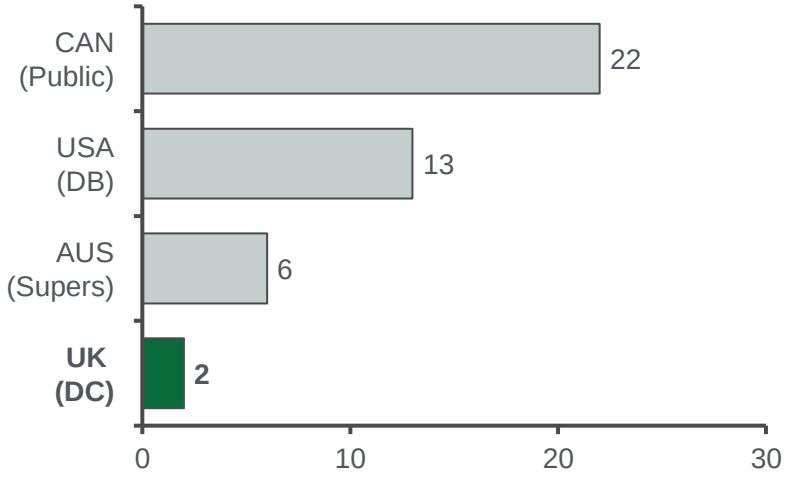
% domestic exposure



- When considering the domestic allocation of pension funds over time, UK DC appear lower than other markets and has fallen fast over time
  - this results in a significantly lower home bias in UK DC schemes vs. other markets

Estimated asset allocation to private equity (2024)

Private equity as a % of total assets



- Comparing allocation to private equity is challenging as available data is less comprehensive across markets; however, it appears that UK DC schemes allocate one of the lowest percentage of assets to private equity as compared to equivalent schemes from Canada, USA, and Australia

Note: *Estimates based on chart published by the department for work & pensions

Source: Wright & Thornhill, (2024). Comparing the asset allocation of global pension systems; Department for Work & Pensions, (2024). Pension fund investment and the UK economy; L.E.K. research and analysis

LEK™

Through the creation of consolidated ‘megafunds’, the Mansion House Reforms and Interim Pensions Investment Review aims to unlock £80bn for investment in high-growth UK opportunities

The Chancellor’s November 2024 Mansion House speech highlighted a series of reforms aimed at enhancing the UK Pensions and Financial Services sector to drive economic growth

Pension Fund Consolidation
Local government pension schemes to merge into £50bn "megafunds" by 2030, unlocking £80bn for UK investment.

Financial Services Growth Plan
A first-ever strategy to boost competitiveness and investment.

Regulation & Consumer Protections
FCA and PRA to balance pro-growth regulation with clearer consumer redress rules

Sustainable Finance
UK Green Taxonomy and ESG regulations to drive green investment

- The Mansion House reforms, by targeting the unlock of £80bn of investment from Pension Funds – earmarked for high-growth opportunities – stands to create significant value for the early-stage companies, pension holders, and the broader UK economy at large
- By driving consolidation of the funds, the UK’s pension landscape may cleave closer to the performance and model of Canadian Pension funds, which – as well as being more consolidated – have further freedom in terms of asset allocation
  - In the UK, however, DB and DC pension schemes are currently limited in the opportunities that they are able to pursue due to regulatory constrains, and a culture of being risk averse
- Canadian Pension Funds - in contrast to the UK pension landscape - allocate a greater proportion of capital to domestic investments, as well as greater proportions to infrastructure, private equity and venture capital.
  - In 2024, Cordiant estimated that a pensioner commencing with a £100,000 pension pot would be >£26,000 better off over a 10-year period, if they had invested in the Canada Pension Plan vs. the average UK plan; implying a c.2.3% p.a. better return
- The UK Life Sciences landscape stands – potentially - to be a significant beneficiary of these changes, noting the high share that Life Sciences companies have of the spin-out and scale-up sector

*Were the £80bn incremental investment to be allocated to the UK Life Sciences sector, in accordance with that sectors share of the spin-out and scale-up markets in the UK, we estimate that it could deliver an incremental **c.£7-10bn** p.a. in incremental GVA to the UK economy*

Source: Financial Time, (2025). Should the UK really look to Canada’s pension system as its model?; Cordiant, (2024). What are the lessons the UK can learn from the Canadian Pensions Model; L.E.K. research and analysis

LEK™

Early-stage companies in the UK suffer from a lack of scale up capital, and Life Sciences companies in particular have better access to funding overseas. Potential recommendations include:

- Driving the **Mansion House** reforms - and consequent consolidation - of the UK pensions landscape through to conclusion
- Diagnose the **root causes of relative underperformance** of the UK Life Sciences Sector in the deployment of Venture Capital
- Driving greater collaboration between academy and industry to encourage UK venture capital **engagement in more R&D intensive sectors**
- Continuing efforts to cultivate the **domestic specialist skillset** required to invest and operate R&D intensive industry
- Encouraging greater levels of **collaboration between Government, the Academy, and Industry**, to help unlock greater levels of investment

Source: Financial Time, (2025). Should the UK really look to Canada's pension system as its model?; Cordiant, (2024). What are the lessons the UK can learn from the Canadian Pensions Model; L.E.K. research and analysis

LEK™

About the authors

Adrienne Rivlin
Partner
L.E.K. Consulting
a.rivlin@lek.com

Dr Adrienne Rivlin is a partner in L.E.K.'s Healthcare and Life Sciences practice, based in the London office. She advises private and public sector organisations across the pharmaceutical, biotech, medical device and consumer healthcare sectors on their critical commercial challenges, including corporate and portfolio strategy development; product launch; pricing and market access; clinical governance structures and processes; and commercial and regulatory due diligence.

Before her 15-year career in consulting, Adrienne was a researcher, public policy consultant and tutor at the University of Oxford. She has authored numerous articles in academic journals on key issues impacting the global healthcare and life sciences sectors.

Jack Duckworth
Partner
L.E.K. Consulting
j.duckworth@lek.com

Jack Duckworth is a Partner in L.E.K.'s Global Industrials Practice, and is based in L.E.K.'s London Office.

He has particular expertise advising in the chemicals sector, and supports a broad set of clients around the topics of the energy transition.

Jack advises clients on a broad range of commercial issues including growth strategy, performance, technology commercialisation, economic impact analysis and transaction support.

Disclaimer

SCI: The Society of Chemical Industry | **L.E.K. Consulting LLP**

This report has been prepared by L.E.K. Consulting LLP ("L.E.K.") for and under the instructions of the Society of Chemical Industry ("SCI") and is disclosed for information and illustration purposes only. It must be considered in the context and for the purpose for which it has been prepared.

It cannot be relied upon by any recipient. In all circumstances and to the maximum extent permitted by law, in accepting disclosure of this report, you agree that neither L.E.K. nor SCI, nor any of their associated companies or persons involved in preparing this report, owe or accept any duty of care, responsibility, or liability to a recipient or any third party, whether in contract, tort (including negligence), breach of statutory duty, or otherwise, howsoever arising, in connection with or arising from the use made of it by a recipient, and recipients release L.E.K. and SCI from any such liability.

Neither L.E.K. nor SCI shall be liable to a recipient or any third party in respect of any loss, damage, or expense of whatsoever nature which is caused by any action or omission by a recipient or any third party, or their reliance thereon, or for any use made of this report, which recipients accept at their own risk. L.E.K. and SCI do not guarantee or make any representation or warranty as to the accuracy, reliability, completeness, reasonableness, or currency of the information in this report, nor its usefulness in achieving any purpose.

This report is based on information available at the time it was prepared and on certain assumptions, including, but not limited to, assumptions regarding future events, developments, and uncertainties. It contains "forward-looking statements" (statements that may include, without limitation, statements about projected market opportunities, strategies, competition, expected activities, and expenditures, and at times may be identified by the use of words such as "may," "could," "should," "would," "project," "believe," "anticipate," "expect," "plan," "estimate," "forecast," "intend," and variations of these words or comparable words).

Neither SCI nor L.E.K. is able to predict future events, developments, and uncertainties. Consequently, any of the forward-looking statements contained in this report may prove to be incorrect or incomplete, and actual results could differ materially from those projected or estimated in this report. L.E.K. undertakes no obligation to update any forward-looking statements for revisions or changes after the date of this report, and L.E.K. makes no representation or warranty that any of the projections or estimates in this report will materialize. Nothing contained herein is, or should be relied upon as, a promise or representation as to the future.

This disclaimer is governed by the laws of England and Wales.