Royal Academy of Engineering | Enterprise Hub

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Spotlight on Spinouts

UK academic spinout trends

Beauhurst

Contents

Foreword

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We are pleased to present *Spotlight on Spinouts 2024*, the fourth edition of the annual report prepared by Beauhurst in collaboration with the Royal Academy of Engineering. The report presents the current state of the spinout landscape through a comprehensive analysis of the trends in IP and commercialisation in the UK. It is an annual report which aims to inform ongoing national debate and future policy to support UK spinouts.

> ***Spotlight on Spinouts 2024*** **is a crucial read in the context of the UK government's recent commitments to strengthening the spinout pipeline to continue to translate the UK's academic excellence into high-growth companies.**

Last year, the Academy's Enterprise Hub celebrated its 10th anniversary. Since it was launched in 2013, the Hub has been supporting talented entrepreneurs and decision-makers to transform breakthrough engineering innovations into disruptive spinouts, startups, and scaleups. We have supported excellence in engineering through over 350 researchers, recent graduates, and SME leaders. These Hub Members have created almost 6,000 jobs and raised over £1.3b in additional funding. The Hub offers smart and flexible training with access to the unique mentoring capabilities of highly talented engineers and business leaders. We have a dedicated regional presence across the UK, embedding training, and opportunities into local ecosystems.

The Enterprise Hub's mission is to identify and support bold IP-rich innovations that can help tackle some of the most complex environmental, economic, and societal challenges. It provides a unique insight and an independent voice on university spinouts. Our work is rooted in practice, and we take no stake in the companies we support. This position enables us to provide input on national discussions on the commercialisation of university-owned IP through different mechanisms in order to highlight the changes needed to address barriers in the UK entrepreneurship ecosystem.

Spotlight on Spinouts 2024 is a crucial read in the context of the UK government's recent commitments to strengthening the spinout pipeline to continue to translate the UK's academic excellence into high-growth companies, as well as ambitions to become a "science and technology superpower".

The *Independent Review of University Spinout Companies*[1] published in November 2023 set out recommendations to help improve the creation and growth of university spinout companies, echoing much of what the Academy has already called for and continues to do so, advocating for the voice of the founder. Tangible change in the spinout landscape can only be achieved by increasing transparency and data available on UK spinouts, and this report series, now on its fourth iteration, has been part of the drive to improve this. We were therefore pleased to see that the *Review* calls for data transparency, and we will continue to encourage stakeholders to share data about the UK spinout journey and where there have been successes and failures. Additionally, in order to ensure that the UK spinouts can grow faster and attract greater investment, the Academy has called for the division of equity that incentivises academic founders, the expansion of training programmes for academics interested in commercialising their research, and improved access to domestic scaleup capital. Looking forward, we are planning to track progress against the recommendations in the *Review* and we will seek ways to support the actions outlined in the government response.

For 2024, we have included additional areas of analysis. Building on the previous iterations, it also examines university stakes by company type following the sector breakdown presented in the *Review* — hardware, software, and life sciences. We hope that the findings from this data help progress the move towards innovation-friendly policies as recommended in the *Review*. This report also analyses spinout demographics by priority sector as identified in the *UK Science and Technology Framework* and universities which have produced the highest number of spinouts in the priority sectors.[2] The Academy's *State of UK Deep Tech 2023* report[3] highlighted that there are 591 active deep tech spinouts from 68 universities, representing 17.1% of the deep tech sector's total business. This highlights that the UK is well positioned to continue to commercialise cutting-edge research; analysis on the spinouts in the priority sectors supports this.

> **Tangible change in the spinout landscape can only be achieved by increasing transparency and data available on UK spinouts, and this report series, now on its fourth iteration, has been part of the drive to improve this.**

There are many valuable insights that will interest aspiring founders, universities, policymakers, industry, and other stakeholders, including:

- The average stake taken by universities has increased from 19.1% to 22.2% over the last year; however, the overall mean stake has decreased over the last decade.
- The *Review* recommends that universities take lower equity stakes in less IP-intensive areas such as software. However, the median stakes by company type revealed a consistent approach to university equity allocation — 21.7% in hardware

[1] Irene Tracey and Andrew Williamson, Independent Review of University Spinout Companies (Department for Science, Innovation and Technology and HM Treasury, 2023), published November 21, 2023, last updated November 22, 2023, accessed April 4, 2024, https://www.gov.uk/government/publications/independent-review-of-university-spin-out-companies.
[2] Department for Science, Innovation and Technology, UK Science and Technology Framework (2023), published March 6, 2023, last updated February 9, 2024, accessed April 4, 2024, https://www.gov.uk/government/publications/uk-science-and-technology-framework.
[3] Royal Academy of Engineering and Beauhurst, State of UK Deep Tech 2023, accessed April 4, 2024, https://raeng.org.uk/media/2y2kkamv/state-of-uk-deep-tech-2023.pdf.

companies, 20.0% in software companies, and 21.2% in life sciences companies.

- In 2023, equity investment in UK spinouts fell by 30.7% from £2.36b to £1.66b. This aligns with a wider trend in the high-growth company ecosystem following record investments in 2021 and 2022.
- While the AI sector has grown significantly over the past five years with 184 AI spinouts, smaller investments became more common in 2022 and 2023 with a return to pre-pandemic levels.
- Last year marked a peak in funding for spinouts in the telecommunications sector across the five years, with a total of £81.2m in equity finance.
- Investment in engineering biology spinouts has sharply declined in the last two years, following a record high of £1.33b in 2021. This was likely driven by the demand for this technology during the COVID-19 pandemic. However, companies in this sector represent 49.3% of the high-growth engineering biology population.
- Semiconductor spinouts represent 47.7% of high-growth companies in this sector, and funding has increased since 2021, rising to £49.3m in 2023. However, this is concentrated among a small pool of investors.
- The Academy is undertaking a review of quantum infrastructure in the UK* and we are pleased to see an increase in funding for spinouts in these sectors — quantum spinouts have experienced a substantial increase in equity investment over the last five years, securing a record amount of £184m in 2023. Both this and investment in semiconductors are going against wider investment trends.

UK spinouts are crucial to improving economic growth and they play a pivotal role in helping to solve some of the most pressing challenges we face. The data in this report helps us understand where we need to take collective action to bolster UK spinouts and entrepreneurs, and the Academy will continue to support government priorities to advance the spinout ecosystem. We would like to thank the stakeholders who helped with the analysis and the university technology transfer offices who provided Beauhurst with the current data. We are also grateful to the RAEng steering group who provided their contributions to this report. We hope that this annual report continues to contribute to progressive change in this space, and we invite those with thoughts or insights to get in touch with us.

* This work has been commissioned by UK government and the Academy has undertaken extensive stakeholder engagement within the quantum community, particularly with industry, to assess the infrastructure requirements of the UK quantum sector to scale effectively over the coming decade.

Executive summary

Henry Whorwood
Managing Director, Research and Consultancy at Beauhurst

Investment in spinouts declined significantly in 2023 despite policy tailwinds for this group of companies that are drivers of technological innovation and economic growth. The total value of equity investment in UK spinouts fell by 30.7% between 2022 and 2023 from £2.36b to £1.66b, continuing the decline from 2021. The mean deal size also fell from £5.70m to £4.32m.

The decline aligns with broader trends in investment in private companies across the UK. The market has cooled from the stimulus-driven highs of 2020 and 2021, with higher rates encouraging investors into safer asset classes. Anecdotally, some investors over-deployed capital during the pandemic, driving up the mean deal size. An uncertain economic outlook and murmurings of recession during 2023 provided a much-needed excuse to invest more slowly and at more normal valuations. So, while we should not ignore the decline in investment, it is unlikely to be here to stay.

While investors took a back seat in 2023, the government has focused on spinouts. The *Independent Review of University Spin-out Companies*, released in November 2023, outlines 11 recommendations to accelerate the commercialisation of university IP by creating spinouts to bolster the UK economy.

Beyond government plans, university-led initiatives are making strides, such as the Midlands Mindforge, a £250m investment vehicle established by Midlands universities launched in 2023.

These new funds and the findings of the *Review* reflect a desire to commercialise academic research more effectively, aiming to bridge the funding gap for early-stage technology businesses and stimulate regional growth. Our report — now in its fourth edition — shows the places and sectors where spinouts are having a profound impact. We're grateful to the Royal Academy of Engineering for their continued support for this research and hope it proves useful to the knowledge exchange community.

1,880
total number of spinouts tracked since 2011 in the UK, with 1,317 active

£1.66b
equity investment received by UK spinouts in 2023

56.7%
proportion of active UK spinouts at the seed-stage as of January 2024

22.2%
average stake taken by universities in spinouts in 2023

Chapter 1

Demographics

Top academic institutions

Top academic institutions by total number of spinouts tracked since 2011 (January 2024) (1-14, continued on next page)

University of Oxford	210
University of Cambridge	149
Imperial College London	124
University College London	93
University of Manchester	86
University of Bristol	76
Royal College of Art	72
University of Edinburgh	66
Swansea University	57
Queen's University Belfast	56
University of Strathclyde	48
University of Warwick	47
Falmouth University	46
University of Sheffield	45

The University of Oxford remains the leading institution in terms of spinout creation, with its number of spinouts increasing from 205 to 210 over the last year. However, this increase is relatively modest compared to last year, which saw 12 new additions. The University of Cambridge continues to hold the second spot, with its total spinouts count increasing from 145 to 149. Imperial College London has experienced the most significant growth in spinout numbers, with a 14.8% increase, raising its total from 108 to 124.

52.3%
of spinouts originated from the top 10 academic institutions

The increase in spinouts from Falmouth University in this year's report compared to last year's is due to a change in the methodology being used to classify spinouts from the university. Falmouth University has confirmed that companies that have attended its Launchpad programme can be classified as spinouts, resulting in an increase in the number of historical spinouts associated with the university.

The ranking of top-origin universities is dynamic as UK universities and company founders are continually creating new spinout companies to commercialise IP. Beauhurst sources spinout data from university technology transfer offices and from public sources throughout the year.

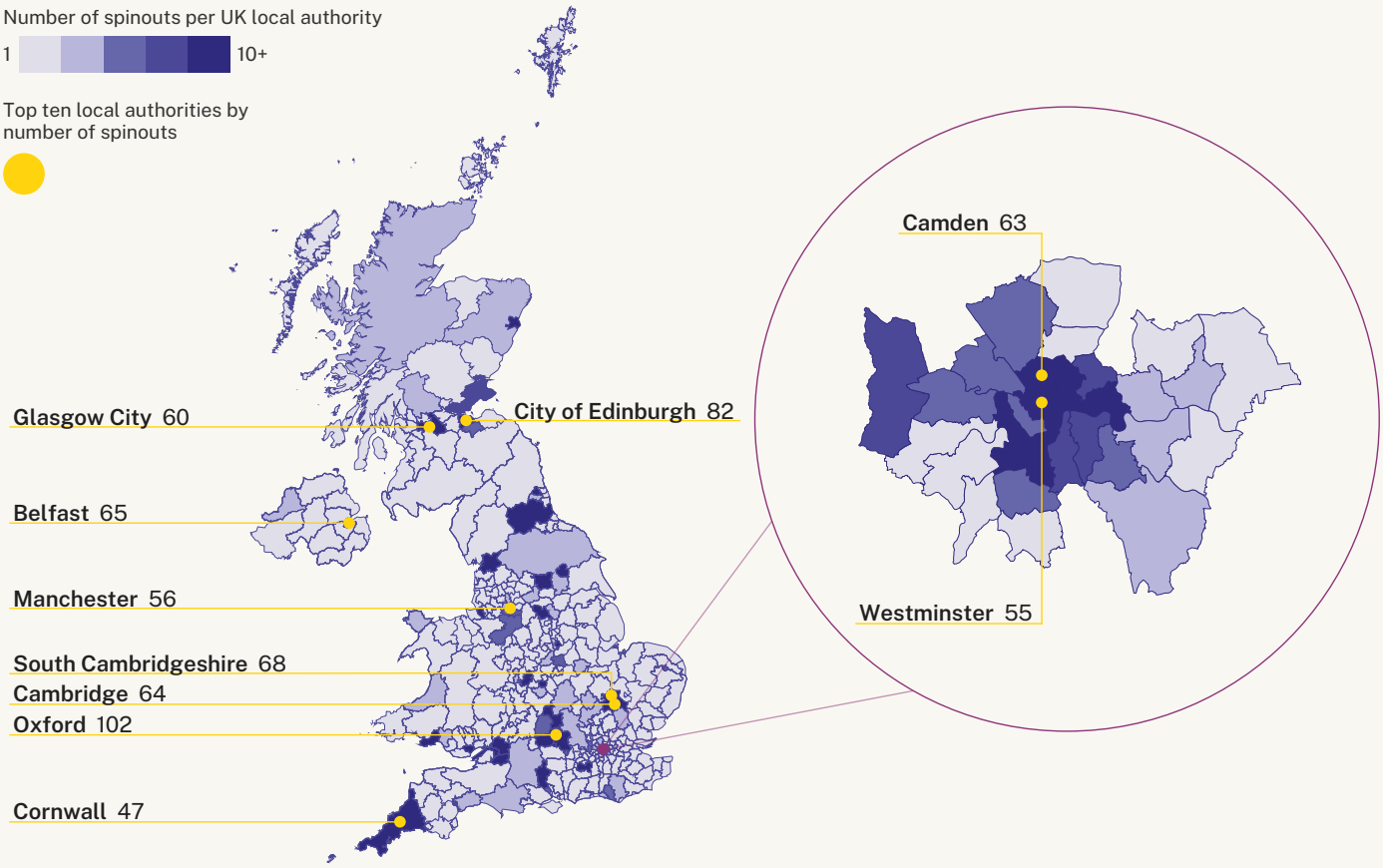
Top academic institutions

Top academic institutions by total number of spinouts tracked since 2011 (January 2024)
(15-42, continued from previous page)

University of Southampton	42	Lancaster University	18
University of Nottingham	39	King's College London	18
University of Leeds	38	University of Dundee	17
University of Glasgow	38	Loughborough University	17
Newcastle University	38	Cardiff University	16
University of Birmingham	34	University of Liverpool	15
University of Exeter	26	University of York	14
Queen Mary University of London	26	University of St Andrews	14
University of Ulster	25	Science and Technology Facilities Council	14
Heriot-Watt University	24	University of Sussex	11
University of Aberdeen	23	Aston University	11
Durham University	23	University of East Anglia	10
University of Surrey	20	City, University of London	10
University of Bath	19	Cranfield University	9

Spinout clusters

Map of top local authorities by number of spinouts (January 2024)

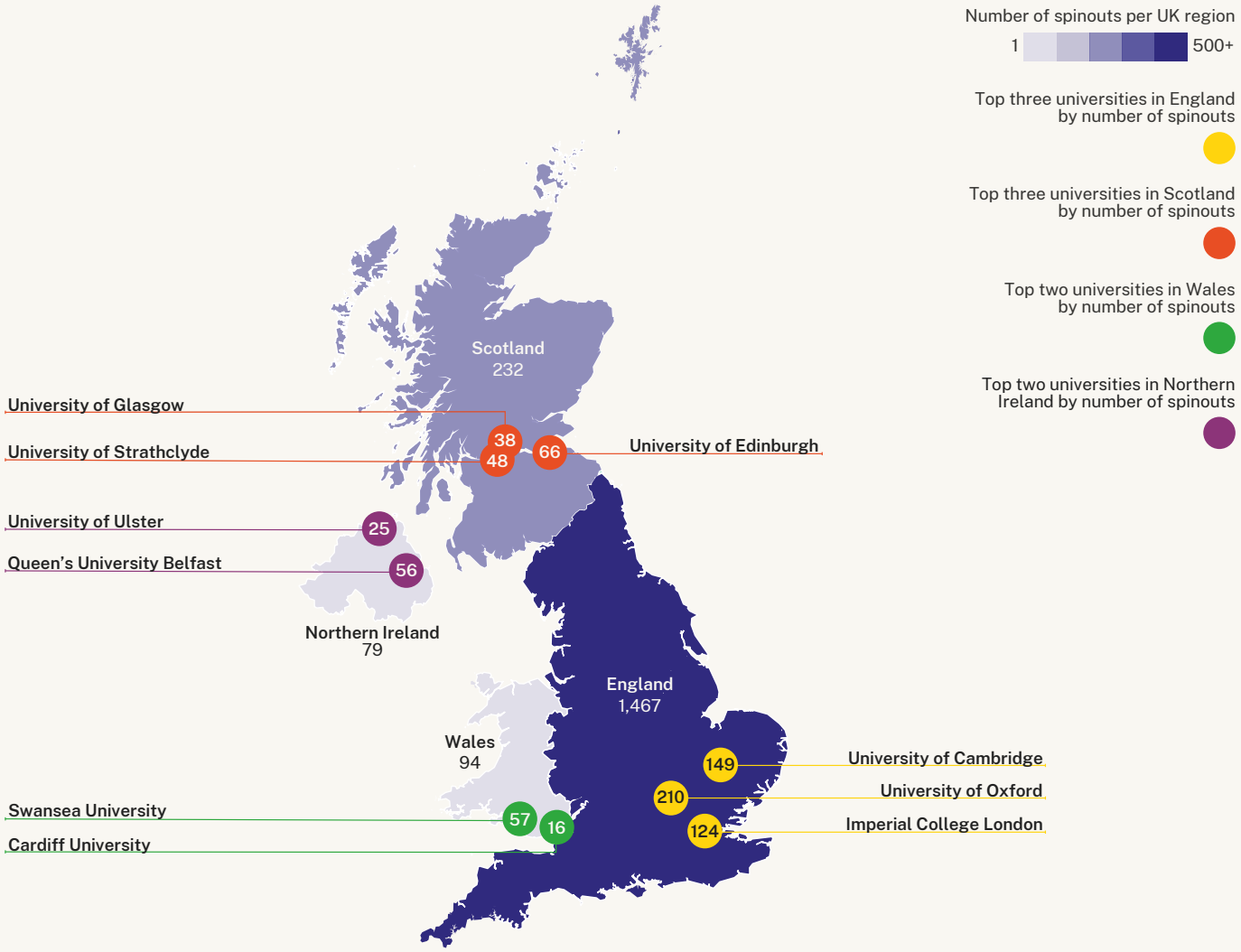


Overall, the number of spinouts in each local authority has seen little change since last year. However, Belfast and Westminster have demonstrated the most significant growth in their spinout populations in the last year, with their numbers increasing from 55 to 65 and 48 to 55, respectively. With 58 spinouts in engineering or technology sectors, the growth in Belfast's spinout population is anticipated to be further supported by the establishment of new innovation centres across the city, part of the £1b Belfast Region City Deal investment in industries of the future.

Numerous spinout firms have established their headquarters in the City of Edinburgh (82). These companies primarily originate from local academic institutions, notably the University of Edinburgh and Heriot-Watt University. Moreover, this tally includes spinouts from across the UK, with 25 companies originating from other Scottish universities, such as the University of Strathclyde and the University of St Andrews. The attractiveness of Edinburgh as a base for these operations stems from its cutting-edge research facilities, good funding ecosystem, and talent pool of science, engineering, and technology professionals.

Regional distribution

Number of spinouts by UK region (January 2024)



The city of Oxford boasts the highest number of spinouts (102), marking an increase of five from the 97 noted in last year's report. This uptick is primarily linked to the University of Oxford, which has launched a total of 210 spinouts, positioning it as the leading university for spinout creation. The tendency for companies to set up their headquarters in proximity to their founding university is not only motivated by access to cutting-edge technical facilities and a reservoir of highly skilled talent but also by the convenience this proximity offers for ongoing collaboration and engagement.

A similar trend can be observed with the concentration of spinouts in Cambridge and London, with Cambridge (64), South Cambridgeshire (68) and Camden (63) among the top local authorities by spinout population. These clusters of spinouts are linked to the presence of high-quality academic institutions in these areas — which includes the University of Cambridge (149) and Imperial College London (124). These two universities have spun out an additional four and 16 companies in the past year, respectively, further contributing to the spinout populations in these areas.

Dominant sectors

Top sectors by number of spinouts (January 2024)

Pharmaceuticals	331
Research tools and reagents	302
Analytics, insight, tools	270
Clinical diagnostics	173
Cleantech	162
Software-as-a-service (SaaS)	144
Medical devices	139
Materials technology	114
Mobile apps	78
Internet platform	76
Nanotechnology	70
Medical instrumentation	66
Security services (physical and virtual)	60
Educational services	52
Healthcare products	51
Desktop software	48
Chemicals	47
Electrical components	41
Waste management services	36
Semiconductors	35

The pharmaceuticals sector, which is focused on drug discovery and development, continues to lead with 331 companies. It is followed by the research tools and reagents sector, which has 302 companies that supply specialised machinery and reagents such as antibodies and DNA for scientific experiments. Universities are pivotal in this domain, utilising their vast research capabilities and state-of-the-art facilities to fuel scientific breakthroughs.

Analytics, insight, and tools (270), paired with the software-as-a-service (SaaS) sector (144), underscores the continued demand for data-driven decision-making and cloud-based software solutions. The high number of companies in these areas illustrates the long-term demand for leveraging big data and advanced analytics to gain competitive advantages across various industries.

Cleantech encompasses firms focused on clean energy, efficiency tech, and other clean technology. Compared to last year's 150, January 2024 saw an 8.00% rise in spinouts, indicating a deceleration from the previous year's 17.2% growth. This slowdown might be due to tougher funding conditions, especially for capital-intensive cleantech hardware projects. Overall investment in the sector appears to be stabilising after a post-pandemic surge.

Dominant sectors

Top emerging sectors by number of spinouts (January 2024)

Artificial Intelligence	184
Genomics	101
Precision medicine	94
eHealth	60
Big data	45
Digital security	44
Wearables	41
Internet of Things	40
Regenerative medicine	37
EdTech	28
3D printing	27
Graphene	26
Virtual reality	24
Quantum	22
Synthetic biology	21
Augmented reality	19
Robotics	17
Cloud computing	17
Image and voice recognition	16
Preventive care	15

Emerging sectors are areas of technological innovation and application outside existing sector classifications. These categories seek to capture business activity at the cutting edge of technology and new business models. The overall ranking has remained similar compared to last year, with minimal growth outside of the top three sectors.

The AI industry (184) is poised for sustained expansion, propelled by the widespread adoption of large language models (LLMs). Last year was a seminal year for AI, driven by the breakthroughs of generative AI technologies like OpenAI's ChatGPT.

Genomics (101) and precision medicine (94) also have significant spinout populations. Both sectors fall under life sciences and are particularly compatible with the academic spinout framework, benefiting immensely from the research conducted by top-tier universities. Companies innovating in the sector include Newcastle-based Alcyomics, a spinout from Newcastle University. It provides the pharmaceutical, biotechnology, cosmetic, and chemical industries with human skin explant assays, allowing them to test the safety and efficacy of novel compounds.

Despite the emphasis on technology and life sciences in spinout discussions, the humanities, social sciences, and arts also offer significant spinout potential, contributing unique business models and perspectives that enrich the diversity of the entrepreneurship ecosystem.

Priority sectors

184
AI spinout companies
(8.54% of the active high-growth AI company population)

70
Telecommunication spinout companies
(13.7% of the active high-growth telecommunications company population)

179
Engineering biology spinout companies[5]
(49.3% of the active high-growth engineering biology company population)

41
Semiconductor spinout companies
(47.7% of the active high-growth semiconductor company population)

25
Quantum spinout companies
(34.7% of the active high-growth company quantum population)

The priority sectors analysed in this report are aligned with those outlined in the *UK Science and Technology Framework* delivered by the Department for Science, Innovation and Technology (DSIT).[4] These are artificial intelligence, future telecommunications, engineering biology, semiconductors, and quantum technologies. This analysis provides interesting insight into how UK spinouts are contributing to sectors where the UK shows pre-existing strengths or exhibit strong potential for future development. Innovation in these sectors will make the UK a more attractive place to invest in these technologies, further supporting innovation.

The priority sectors are interconnected, with developments in one sector potentially having a significant impact on the others. The analysis presented here reflects that companies may combine multiple technologies, resulting in some companies being double-counted among the statistics for priority sector spinouts.

[4] Department for Science, Innovation and Technology, UK Science and Technology Framework (2023), last updated 9 February 2024, accessed 22 Apr 2024, https://www.gov.uk/government/publications/uk-science-and-technology-framework

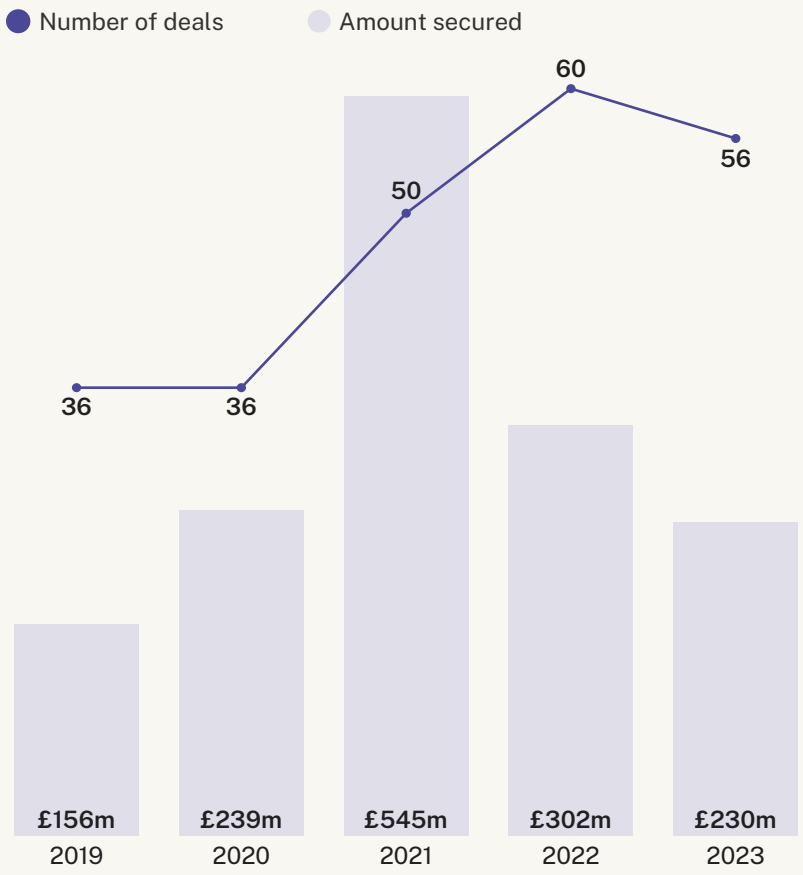
[5] Engineering biology describes the application of engineering principles to biology, enabling the construction of new or redesigned biological systems. Engineering biology applications is an umbrella for a number of application sub-sectors including agriculture, food, health and life sciences, the creation of high-value compounds and bio-energy & carbon capture. The EngBio spinouts included in this report were based on a non-exhaustive list provided by DSIT of which 600+ were application companies. The 179 spinouts were identified from this cohort.

Artificial Intelligence

Top regions by number of Artificial Intelligence spinouts (February 2024)

London	57
South East	34
East of England	18
North West	13
South West	13
Scotland	13
West Midlands	11
East Midlands	9
Wales	6
Yorkshire and The Humber	4
North East	3
Northern Ireland	3

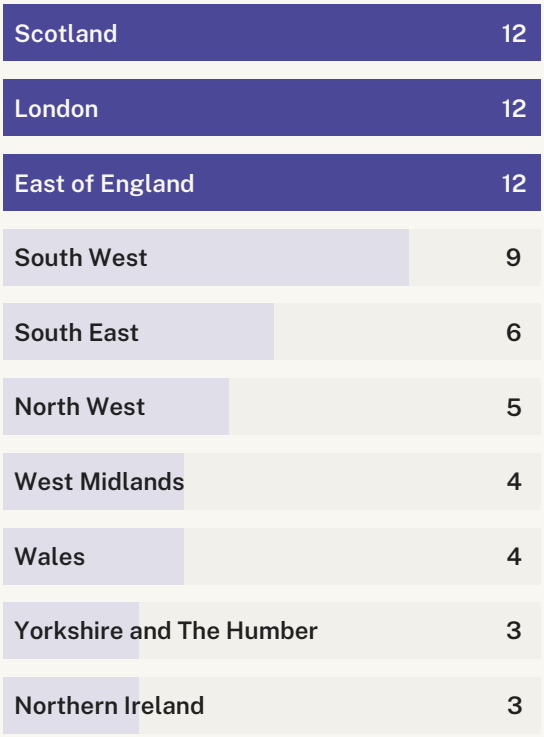
Equity investment secured by Artificial Intelligence spinouts (2019-2023)



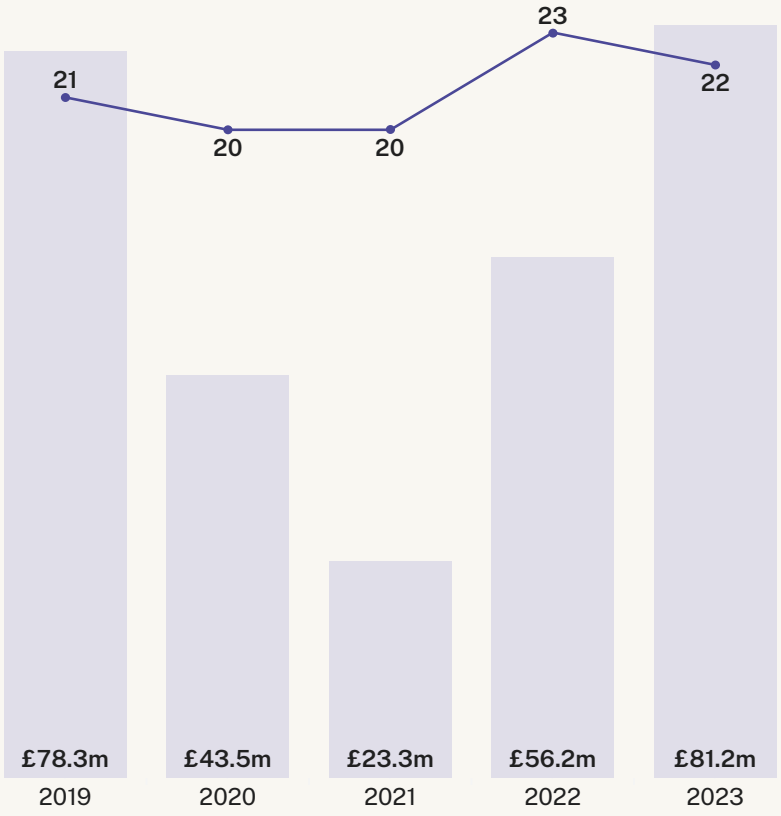
The AI sector has grown significantly over the past five years, particularly in the number of spinouts operating within the sector. London is the leading region for AI spinout activity, with 57 companies headquartered in the capital. Within London, the boroughs of Camden and Westminster have the highest concentration of spinouts, with nine and eight companies, respectively. London's popularity as an AI hub is further underlined by its numerous research organisations and academic institutions, including University College London and Imperial College London. Beyond London, Oxford is the most prominent local authority for AI spinouts, with 21 companies. In 2021, these companies raised an unprecedented £545m in equity investment, doubling the value of investment raised in 2020. These elevated levels can be explained by several large deals by Dundee-based Exscientia and Bristol's Graphcore. AI investment values returned to pre-pandemic levels in 2022 and 2023, aligning with shifts in equity investment across sectors. While activity levels remained strong, smaller investments have become more common as valuations have returned to more normal levels and investors have deployed capital more cautiously.

Telecommunications

Top regions by number of telecommunications spinouts (February 2024)



Equity investment secured by telecommunications spinouts (2019-2023)



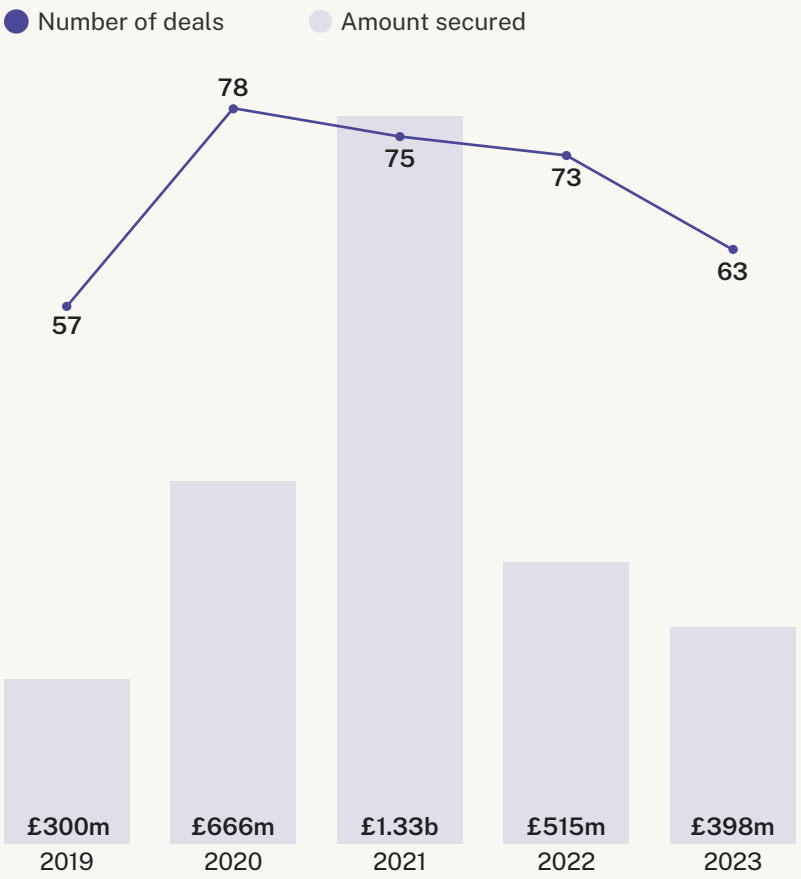
The global telecommunications market is expected to grow rapidly in years to come, driven by emerging technologies such as 6G, quantum, and AI. For the purpose of this report, telecommunications includes telecommunication services as well as companies operating in the fixed-line and mobile spaces. Within the UK, three regions stand out as leaders in telecom spinouts by numbers: Scotland, London, and the East of England. Among these, the East of England is the top region in terms of equity raised by these companies, securing a total of £98.7m in funding over a five-year period. The most populous local authority is Cambridge, which is home to seven out of the 12 spinouts headquartered in the East of England. Cambridge boasts an extensive network of research centres and facilities, including the Cambridge Graphene Centre, which is at the forefront of research into graphene-based photonic devices. Spinouts in this sector have raised a collective £283m across 106 deals over a five-year period. Last year marked a peak in funding, with a total of £81.2m in equity finance, including a major investment of £29.2m secured by Cambridge Mechatronics.

Engineering biology

Top regions by number of engineering biology spinouts (February 2024)

South East	38
East of England	37
London	28
Scotland	27
South West	11
West Midlands	9
Northern Ireland	8
North East	7
Yorkshire and The Humber	5
Wales	4
North West	4
East Midlands	1

Equity investment secured by engineering biology spinouts (2019-2023)



Engineering biology is a scientific field involving the application of engineering principles to the design of biological systems. The “golden triangle”, encompassing London, Oxford, and Cambridge, serves as the primary hub for the majority of spinouts in the engineering biology sector. The South East has the largest distribution of spinouts, with 38 companies headquartered in the region. The East of England follows closely with 37 companies; it benefits from the presence of prominent research institutions like AstraZeneca’s Global R&D Centre in Cambridge.

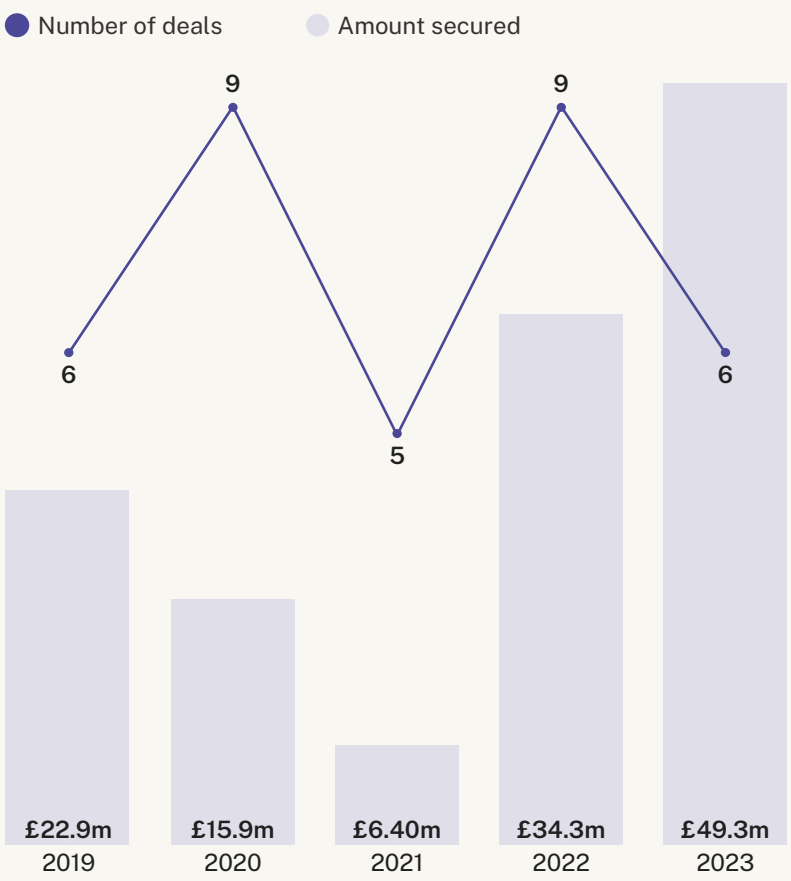
Collectively, these companies have raised £3.21b over a five-year period and completed 346 deals. Investment reached a record high in 2021, largely driven by increased demand for the technology during the COVID-19 pandemic. Companies such as Oxford Nanopore Technologies and London-based Quell Therapeutics were involved in the largest equity fundraisings in 2021, receiving £195m and £143m, respectively. Investment has declined since the 2021 peak, with companies receiving under half the amount of equity funding in 2022.

Semiconductors

Top regions by number of semiconductors spinouts (February 2024)

Scotland	8
South East	6
South West	5
East of England	5
Yorkshire and The Humber	4
Wales	3
North East	3
London	3
West Midlands	2
East Midlands	1
Northern Ireland	1

Equity investment secured by semiconductors spinouts (2019-2023)



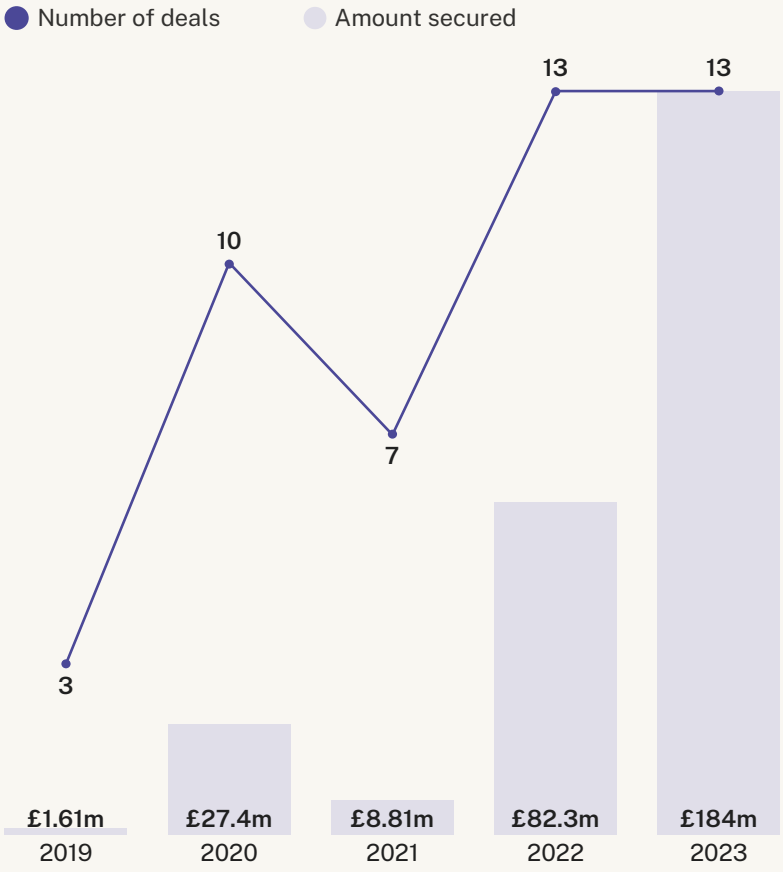
The highest concentration of semiconductor spinouts is in Scotland, with eight companies. The Central Belt stretching between Glasgow and Edinburgh has the highest share of companies and benefits from a large support network of organisations, including the recently opened Compound Semiconductor Applications Catapult office in Strathclyde. There are very few companies in London operating in the semiconductor industry — in contrast to what is observed in the other priority sectors. Equity funding volumes into semiconductor spinouts fluctuated over the past five years, decreasing substantially from 2019 to 2021. Despite 2021 marking the lowest year in funding, it correlates with a proportionally lower number of deals. There was an uptick in funding volumes in the following years, growing by fivefold in 2022. This significant increase in investment into semiconductor spinouts notably contrasts with broader trends in technology investment, which have seen a general downturn in the same period. While investment has grown in later years for semiconductor spinouts, it is concentrated among a small pool of investors, including Scottish Enterprise, BGF, and Parkwalk Advisors. This may reflect both the small number of companies available for investment and the need for specialised knowledge to effectively assess the viability of semiconductor technologies.

Quantum

Top regions by number of quantum spinouts (February 2024)

South East	9
South West	4
Yorkshire and The Humber	3
London	2
East of England	2
Scotland	2
North West	1
West Midlands	1
Wales	1

Equity investment secured by quantum spinouts (2019-2023)



Just over a third of the population of high-growth quantum companies are spinouts, with most of them clustered around the “golden triangle” of London, Cambridge, and Oxford. The highest concentration of spinouts is in the South East, where nine companies are headquartered. The region’s strength in the sector can be attributed to the robust quantum research at Oxford University and is further bolstered by the National Quantum Computing Centre in Harwell. Over the past five years, equity investment in quantum spinouts has increased considerably. In 2023, these companies secured a record-breaking £184m in equity investment via 13 deals. The increases in investment in 2022 and 2023 go against the wider investment trends seen in the high-growth ecosystem. This may reflect the increasing numbers of quantum company formations in recent years, helping to drive investor interest. The investment total for 2023 also includes a number of large deals, such as those by Oxford Quantum Circuits or London-based Quantum Motion.

Spotlight on universities

The universities featured in this section have created the most spinouts in the UK government's priority sectors. The priority sectors are outlined in the *UK Science and Technology Framework*, which aims to position the UK as a world leader in innovation and technology. Most universities with high spinout numbers also excel in priority sectors, except the University of Strathclyde, Warwick, and Glasgow. Despite having a lower number of spinouts overall, they produce a proportionally high number of spinouts in the priority sectors.

The population figures presented reflect the number of spinouts that have met Beauhurst's tracking criteria since 2011. Beauhurst's dataset captures fluctuations in spinout populations.

University of Oxford

The University of Oxford has the most spinouts (210), 36.7% of which are from the priority sectors (77). Of the spinouts, 166 have secured equity investment (79.0%), amassing £4.69b via 577 rounds. A successful spinout is Oxford Nanopore Technology, a leader in gene sequencing, which raised £718m before exiting via an IPO in 2021. Another example, is OrganOx, which develops medical devices that maintain human livers for transplants. It has raised £74.5m in equity funding via 14 rounds.

University of Cambridge

The University of Cambridge has been the source of 149 spinouts, with 108 (72.5%) successfully raising equity. These companies have raised investment of £2.38b via 390 rounds. Of the spinouts, 54 (36.2%) companies are in priority sectors. This includes Biomodal, an engineering biology company focused on developing genome sequencing technologies. Biomodal has raised a total of £106m in equity since its inception in 2014.

University College London

University College London has spun out 89 companies that it supports via its subsidiary UCL Business. Of the companies, 32 (36.0%) are from the priority sectors, including Quantum Motion, which develops and commercialises silicon-based quantum computers. The majority of spinouts, 58 (65.2%), have received equity investment for a total of £1.63b via 172 fundraising rounds.

Imperial College London

Imperial College London has launched 124 spinout companies, 27 (21.8%) of which are from the priority sectors. Eighty spinouts (64.5%) have raised equity investment worth a combined total of £973m. Through its Founders Choice programme, Imperial now allows academic founders to keep up to 95% of founding equity, offering flexible IP planning, low royalties, and both non-dilutable and dilutable equity options in spinouts.

Spotlight on universities

University of Bristol

Since 2011, Beauhurst has monitored 76 spinout companies originating from the University of Bristol, including 26 (34.2%) from high-priority sectors. Together, these firms have garnered £1.02b through 177 equity investment deals. Notably, Graphcore, a company that focuses on creating technology to enhance machine learning applications in servers and the cloud, accounts for £528m of this funding.

University of Edinburgh

There have been a total of 66 companies spun out from the University of Edinburgh, of which 16 (24.2%) are from the priority sectors. Of the 66 companies, there have been eight exits (12.1%), with all companies having been acquired. This includes Blackford Analysis, a developer of software that can analyse very large sets of images, such as brain scans. It was acquired by German pharmaceutical company Bayer in February 2023.

University of Warwick

Situated in Coventry, the University of Warwick has created 47 spinout companies, 15 (31.9%) of which are in priority sectors. Of the spinouts, 34 (72.3%) have successfully secured equity funding, which has collectively raised £246m across 120 funding rounds since 2014. Additionally, there have been three instances where spinouts from the University of Warwick were acquired.

University of Manchester

The University of Manchester has been instrumental in creating 86 spinout companies, with 15 (17.4%) of them operating within priority sectors. Of the spinouts, 44 (51.2%) have raised equity, securing a collective funding of £564m through 115 deals. There have been four exits, comprising two acquisitions and two IPOs. Notably, Orchard Therapeutics, which specialises in gene therapies for rare diseases, went public on the NASDAQ in October 2018.

University of Glasgow

The University of Glasgow has successfully transformed research into 35 spinouts, with 13 (37.1%) in the priority sectors. Collectively, these businesses have secured £100m in equity funding, with Chemify raising a notable £36.0m in a single funding round. Chemify focuses on supplying digital hardware and software solutions for chemical processing applications.

University of Strathclyde

Since its first spinout event in 2002, the University of Strathclyde has successfully turned its research projects into 48 spinouts, with 13 (27.1%) in the priority sectors. Among the spinouts, 75.0% have obtained equity funding — together raising a total of £208m. The most significant funding round in 2023 (£34.3m) was secured by ENOUGH, a company specialising in mycoprotein development.

Chapter 2

Funding sources

Equity investment

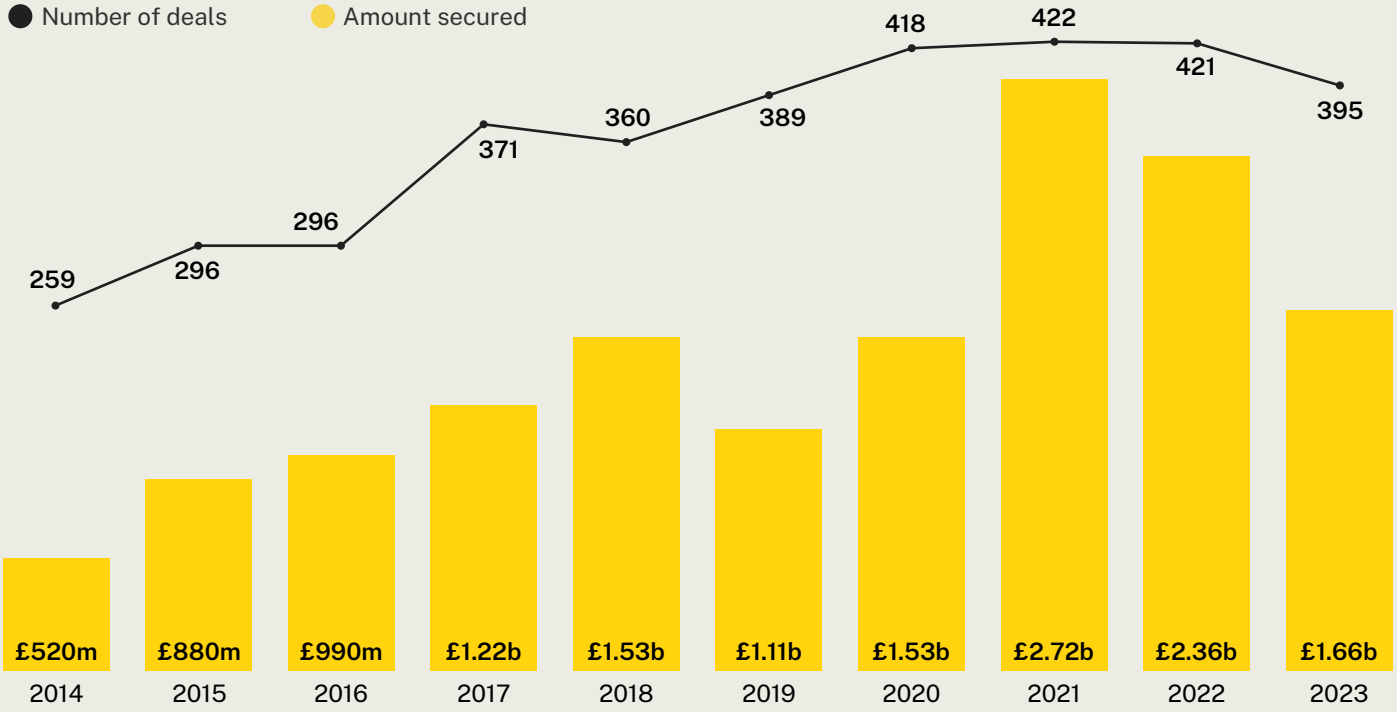
Equity investment in UK spinouts fell by 30.7% year-on-year, from £2.36b to £1.66b. Despite this drop, spinouts have seen robust growth over the last decade. The year-on-year decrease since 2022 aligns with a wider trend in the high-growth company ecosystem, following a period of record investment in 2021 and 2022, boosted by economic stimuli and a strong investor appetite for tech. Higher base rates have encouraged the reallocation of capital into less risky asset classes, though reasonable deal numbers indicate ongoing interest in companies commercialising university IP.

Beauhurst's equity investment data is continuously updated to include new deals and newly identified spinout companies, leading to minor adjustments in total investment figures for past years. This year's *Spotlight on Spinouts* report shows slight variations in annual investment and deal totals compared to previous reports.

3,627
total number of equity deals (2014-2023)

£14.5b
total value of equity deals (2014-2023)

Equity investment secured by spinouts (2014-2023)



Top investees of 2023

This section highlights the top investees of the past year, showcasing the companies that raised the most equity funding for growth. Notably, three of the five companies highlighted are in the life sciences sector: Complement Therapeutics, Tenpoints Therapeutics, and Perspectum. The high values of investment raised by these companies reflect ongoing investor appetite for innovations born of university labs. Notably, all companies featured operate in one of the priority sectors outlined in the government's *UK Science and Technology Framework.*

Synthesia

Total equity raised: £121m
Incorporation date: 25/08/2017
Sector: Artificial Intelligence

London-based Synthesia develops AI technology designed to model the human face in motion accurately. Its technology allows for rapid text generation into professional video based on these models. The University College London spinout has raised £71.4m in equity funding in June 2023.

Tenpoint Therapeutics

Total equity raised: £69.9m
Incorporation date: 07/09/2020
Sector: Life sciences

London-based Tenpoint Therapeutics aims to offer a single long-lasting treatment that reverses vision loss by repairing and replacing damaged eye tissue using specialised engineered cells. The University College London spinout raised £53.9m in equity funding via a deal in July 2023.

Oxford Quantum Circuits

Total equity raised: £120m
Incorporation date: 05/06/2017
Sector: Quantum

Founded in 2017, Reading-based Oxford Quantum Circuits' development of quantum optimisation technologies aims to revolutionise industries by enhancing decision-making in pharmaceuticals and finance, and driving efficiencies in logistics and manufacturing. The University of Oxford spinout has raised £79.6m via two rounds of equity funding in 2023.

Complement Therapeutics

Total equity raised: £68.8m
Incorporation date: 12/03/2020
Sector: Life sciences

Founded in 2020, London-based Complement Therapeutics aims to use gene and protein therapy to treat age-related macular degeneration and other conditions linked to immune system malfunction. The University of Manchester spinout has raised £63.6m in equity funding in April 2023.

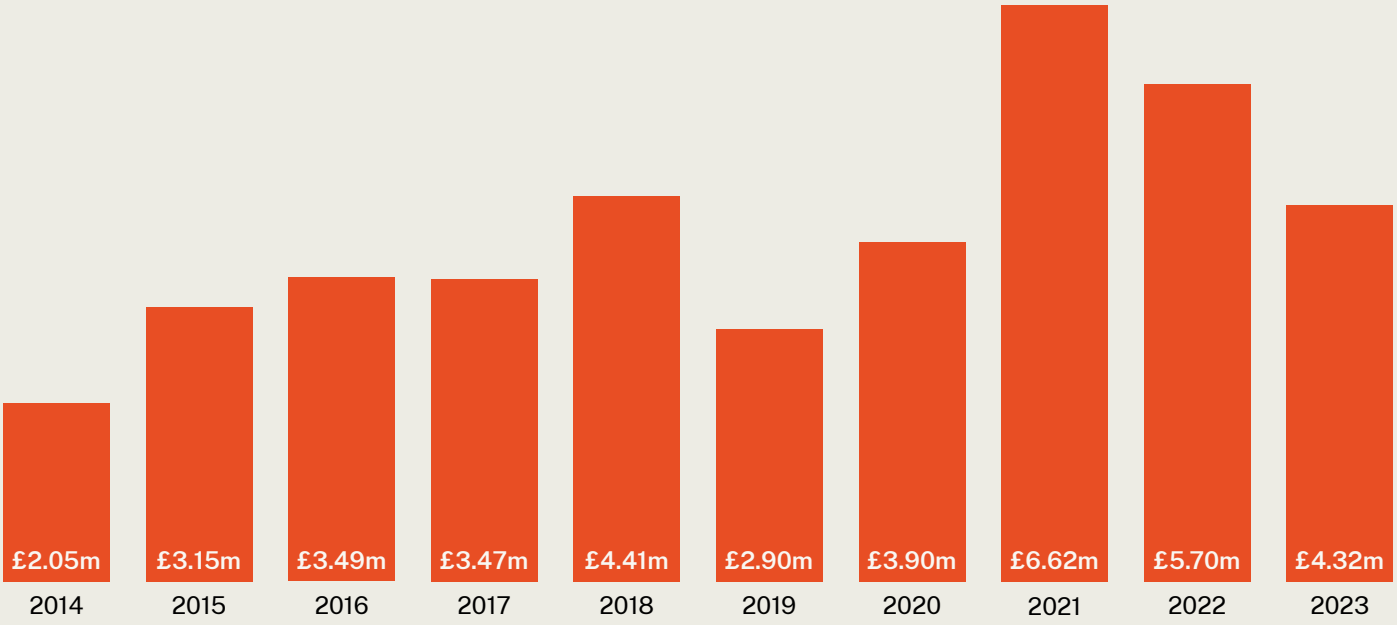
Perspectum

Total equity raised: £94.7m
Incorporation date: 10/06/2021
Sector: Life sciences

Established in 2021, Oxford-based Perspectum specialises in advanced diagnostics tools that provide non-invasive, quantitative assessments of multiple organs, facilitating better medical decision-making and personalised patient care. The University of Oxford spinout raised £45.6m in March 2023.

Average investment size

Average size of equity deals secured by spinouts (January 2024)



£4.00m
average investment round size (2014 -2023)

111%
increase in average investment into spinouts (2014 -2023)

In 2023, the mean amount of money invested in spinouts via equity deals was 14.8% less than the previous year, dropping from £5.07m to £4.32m. This marks the second consecutive year where the average investment has decreased from the year before. However, looking at the last 10 years, the average size of investments in new spinouts has increased, with growth of 111% from 2014 to 2023, bringing the average investment to £4.00m.

Beauhurst's equity investment data is a dynamic dataset that evolves as new deals surface and spinout companies are identified. As a result, annual average equity investment deal sizes may vary over time. The figures in this year's *Spotlight on Spinouts* report may differ slightly from previous years, highlighting the continuous changes in the dataset.

Top investors

Top investors by number of equity deals into spinouts (2014-2023)

Parkwalk Advisors	315
Scottish Enterprise	308
Mercia Ventures	171
Cambridge Enterprise	119
Oxford Science Enterprises	117
Future Planet Capital	114
IP Group	112
SyndicateRoom	86
Archangels	60
Cambridge Angels	56
Development Bank of Wales	55
British Business Bank	53
Oxford Technology	47
Epidarex Capital	42
BGF	42
Amadeus Capital Partners	42
Northstar Ventures	41
Foresight Group	39
Touchstone Innovations	38
SFC Capital	38

The figure for Parkwalk (combined funds) includes all deals by Parkwalk funds, including those featuring elsewhere on this ranking.
Parkwalk and Touchstone are now subsidaries of IP Group.

Parkwalk Advisors is the leading investor in spinouts based on deals since 2014, having participated in 315 deals. Furthermore, it also leads in terms of the value of its deal participation. This demonstrates Parkwalk Advisors' commitment to investing in companies across all stages of development, not just in the initial funding phases.

Scottish Enterprise has participated in 308 deals since 2014. This figure encompasses investments made via its various arms, including the Scottish Co-Investment Fund and the Scottish Venture Fund. These entities aim to stimulate innovation and economic growth across Scotland, with financial backing from the Scottish Government.

The new top investors this year, such as Future Planet Capital and Forbion Capital Partners, reflects a diversifying and expanding ecosystem for spinout financing, demonstrating the attractiveness of spinouts to a broad array of investors.

Angel networks, including Archangels (60) and Cambridge Angels (56), are prominent investors in UK spinouts. These figures underscore the critical contribution of angel investors to the ecosystem, providing financial resources and expertise to early-stage ventures that might otherwise struggle to secure funding. Beyond capital, spinout founders gain significantly from the guidance, business acumen, and networks these seasoned investors can provide.

Top investors

Top investors by value of equity deal participations into spinouts (2014-2023)

Parkwalk Advisors	£1.73b
Oxford Science Enterprises	£1.66b
IP Group	£1.38b
Syncona Partners	£1.03b
Woodford Investment Management	£959m
Amadeus Capital Partners	£650m
Molten Ventures	£611m
Google	£578m
Cambridge Innovation Capital	£569m
BGF	£516m
Scottish Enterprise	£514m
Cambridge Enterprise	£513m
AlbionVC (UCL Technology Fund)	£506m
British Business Bank	£498m
Novo	£496m
Sofinnova Partners	£419m
Touchstone Innovations	£412m
F-Prime Capital Partners	£411m
Forbion Capital Partners	£397m
Future Planet Capital	£381m

The above figures refer to the size of the whole deal the fund participated in, rather than the individual contribution of the fund to the deal, as this information is usually not disclosed.
Parkwalk and Touchstone are now subsidiaries of IP Group.
Woodford Investment Management is now defunct.

Based on equity deals since 2014, Parkwalk is the top investor by the value of deals with spinouts, participating in fundraisings worth a total of £1.73b. Parkwalk has participated in several large deals, including a £42.0m fundraising round by quantum technology developer Quantum Motion in February 2023. Parkwalk was founded in 2009 and invests in spinouts across the deeptech, healthtech, and life sciences sectors. It has partnerships with several universities, including University of Oxford, University of Cambridge, and Imperial College London.

Parkwalk is notable because of its Enterprise Investment Scheme (EIS) funds. EIS and the Seed Enterprise Investment Scheme (SEIS) are tax advantaged schemes for individuals to encourage investment in early-stage companies. Managed SEIS and EIS funds allow individuals to use the schemes without having to directly manage the investment process.

Foreign investors like Novo Holdings (£496m) and Google Ventures (£578m) rank highly in terms of investment value in UK spinouts. The engagement of significant global investors with UK spinouts underscores the value of the intellectual property held by these companies and their ability to draw international attention. Collaborations with international investors afford spinouts the opportunity to access new markets and leverage global networks, enhancing their growth potential and reach.

Early investors

Institutional investors

Parkwalk Advisors

Number of seed-stage deal participations: 99
Value of seed-stage deal participations: £225m

Parkwalk Advisors (99) has participated in the most seed-stage deals in the spinout ecosystem, with the value of these deals with a combined total of £225.8m. These deals make up close to 37.1% of all deals the fund participates in, which are focused on "hard science" innovation, such as AI, cleantech, and life sciences.

Scottish Enterprise

Number of seed-stage deal participations: 98
Value of seed-stage deal participations: £127m

Scottish Enterprise is Scotland's national economic development agency dedicated to fostering economic growth and innovation across the region. Funded by the government, it has participated in 98 seed-stage deals with spinouts, with a combined total of £127.2m in value.

Cambridge Enterprise

Number of seed-stage deal participations: 70
Value of seed-stage deal participations: £187m

The University of Cambridge Enterprise Fund is dedicated to supporting businesses that bring the University's research to market. Given the University's status as a leading creator of spinout companies, the fund has engaged in the third-highest number of seed-stage deals (70), with an aggregate value of £187m.

Angel investors

Angel networks are pivotal in aiding early-stage startups, including those spinning out from academic institutions. Since angel investors utilise their personal funds, they have the capacity to assume greater risks and frequently serve as the initial capital providers for nascent companies. These networks facilitate deal discovery for individual angels and allow for risk-sharing through collective investments with fellow angels. Angel networks have participated in 528 fundraising rounds for spinouts from 2014 to 2023, representing 11.3% of all spinout deals completed during the period and 16.3% of all deals completed by angel networks.

Independent angel investors are essential in backing companies that are bringing university research to market. In the UK, over 1,000 angels hold shares in at least three spinout firms, indicating a wide interest in fostering such innovative enterprises. With their extensive networks and deep insights into business development, these angels are valuable allies for founders, especially in the formative phases of their companies.

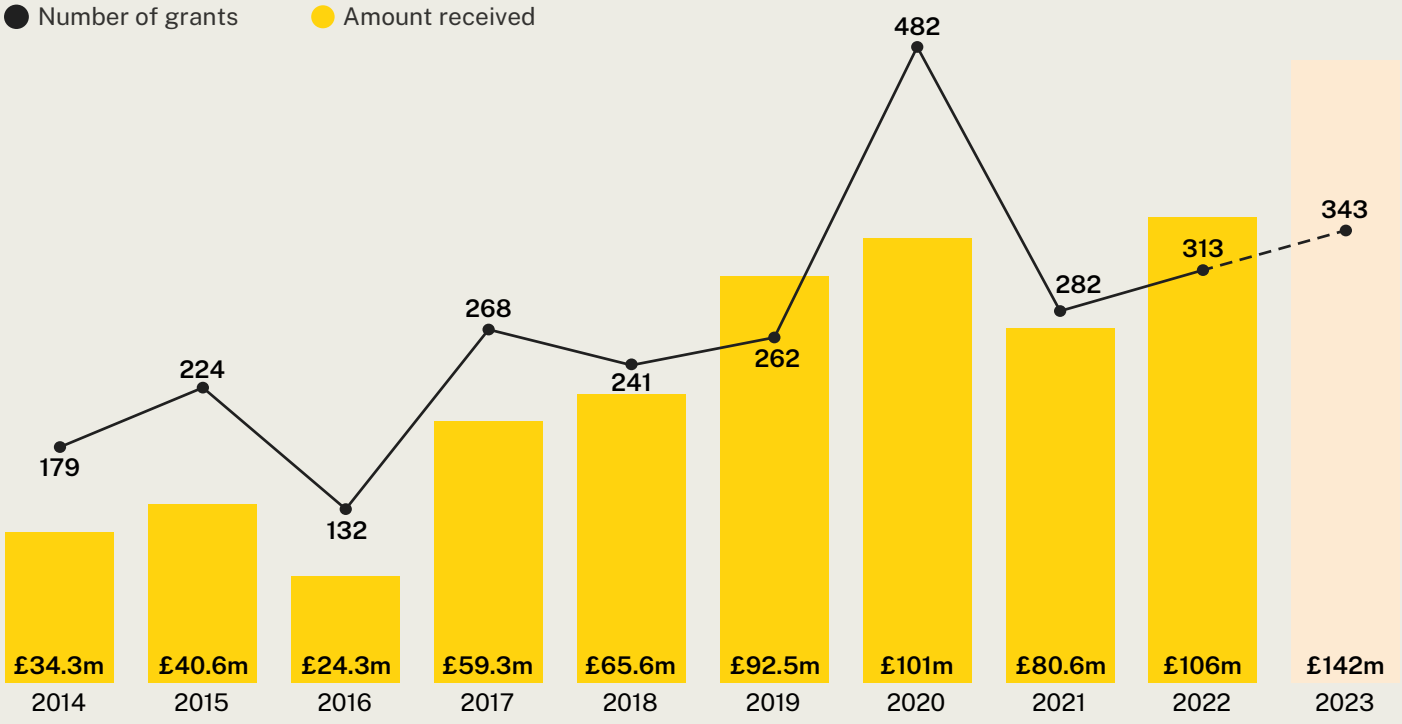
Innovate UK grant funding

Between 2014 and 2023, the value of Innovate UK grant funding awarded to spinouts saw more than a fourfold increase, from £34.3m to £142m, while the number of grants nearly doubled from 179 to 343. A record 482 grants were awarded to spinouts in 2020, totalling £101m, a surge driven by grant programmes specifically designed to support SMEs during the COVID-19 pandemic. Since 2021, there has been an increase in awards and total value each year. Spinouts secured 34.0% more investment by value in 2023 compared to the year before. The increase in the number and total value of grants secured by spinouts reflects the importance of public funding, especially in the face of a more challenging private funding environment, as highlighted on page 21.

2,726
total number of IUK grants (2014-2023)

£747m
total value of IUK grants (2014-2023)

Innovate UK grants received by spinouts (2014-2023)



The data visualised on this page uses Beauhurst spinout data and Innovate UK grant funding data. The grant data includes grants to spinouts to made until December 2023, accessed from the 8th March 2024 version of "Innovate UK Funded Projects Since 2004." (https://www.ukri.org/publications/innovate-uk-funded-projects-since-2004/). Innovate UK state that additional grants made in 2023 may be disclosed in subsequent versions of the file.

Chapter 3

Survival, growth and exits

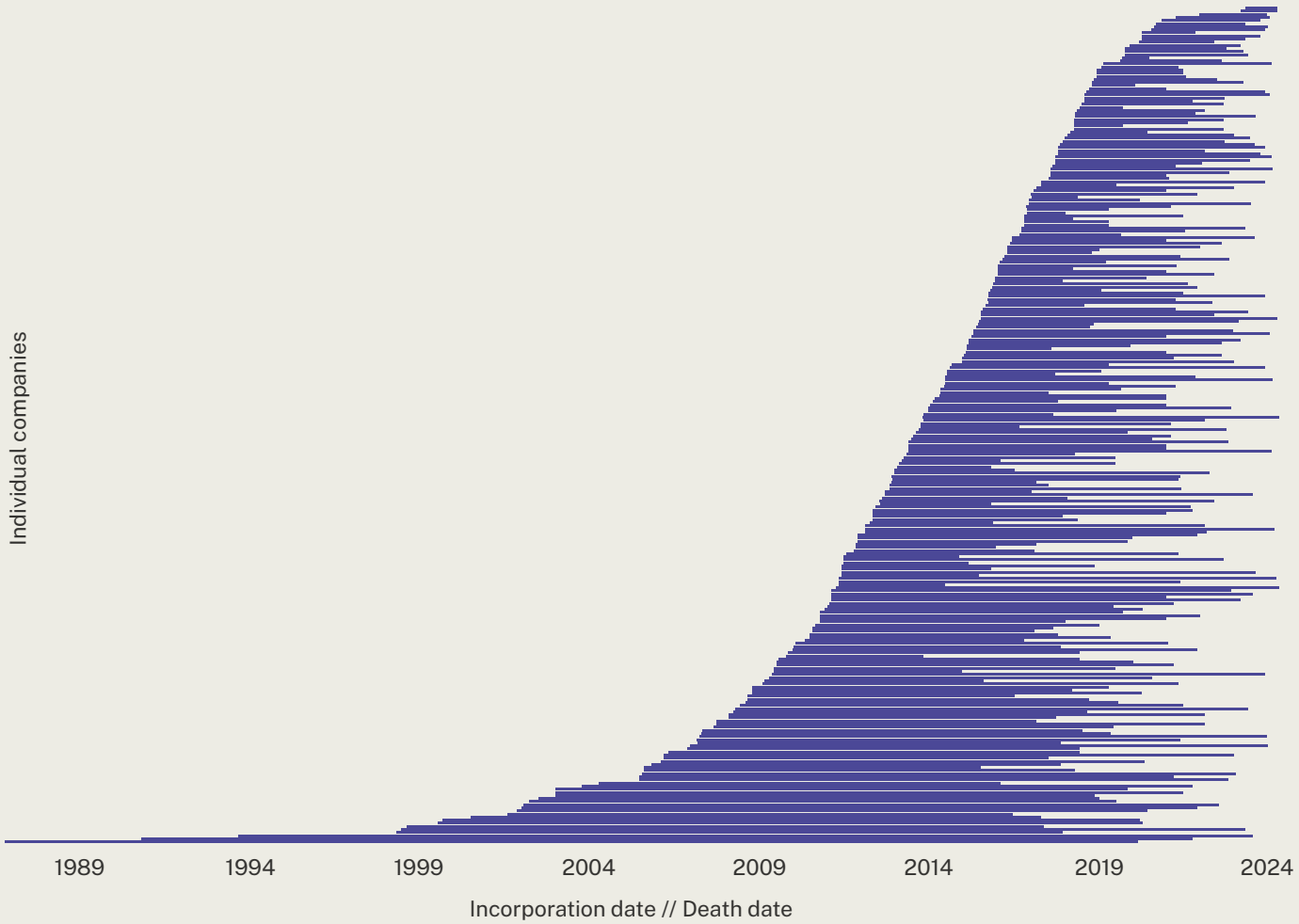
Survival rates

Out of the 1,880 university spinouts in the UK, 355 (18.9%) have ceased operations, highlighting the challenge involved in commercialising new technologies. While failure is often seen as a challenging but natural part of the ecosystem, a more troubling and less acknowledged phenomenon is the prevalence of “zombie” companies. Of the active spinouts, 70 (5.31%) are classified as zombie companies. This not-insubstantial part of the population operates at minimal capacity but draws in capital and people. The dilemma for these companies is whether it is more beneficial to face outright failure or to find pathways to rejuvenate and achieve meaningful growth.

7.69 years

average age of UK spinouts at death (2014-2023)

Lifespan of now-dead spinouts (January 2024)

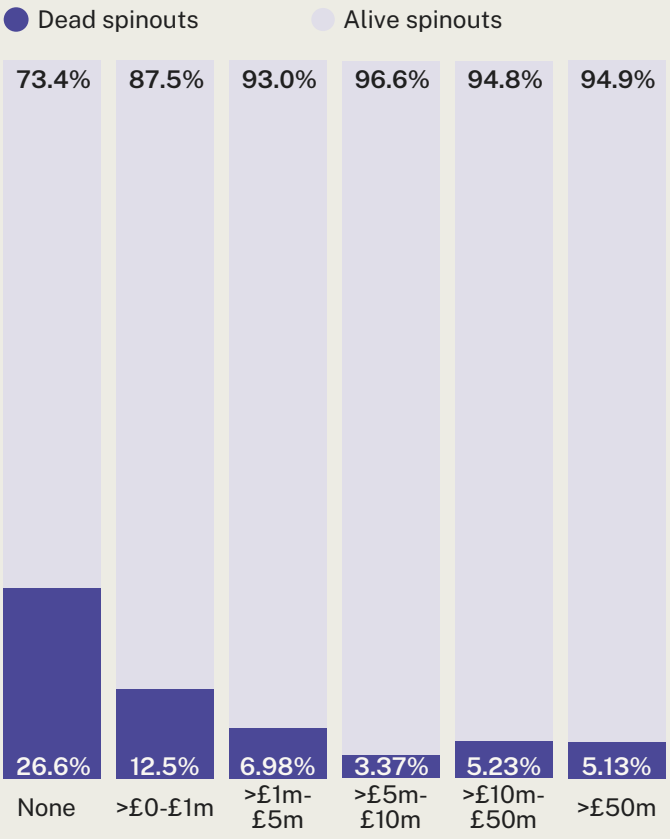


Failure rates

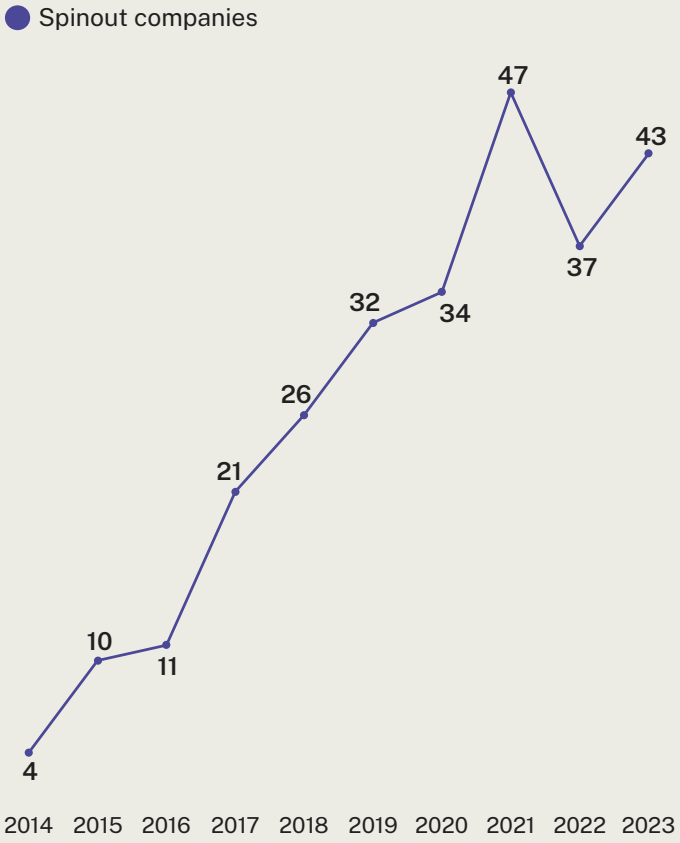
Analysis of the 1,118 spinouts that have raised equity investment shows that well-capitalised spinouts generally have higher survival rates, suggesting that funding can improve the odds of success. However, distinguishing whether funding success is due to more resources or the inherent qualities it signifies, such as strong IP, team, and leadership, is complex. A separate analysis by the Academy and Beauhurst shows that there is a relationship between the equity stake taken by a university and spinout outcomes, with larger stakes associated more with failed companies.[6] Again, the causality is unclear, although anecdotally, investors are more reticent to invest in companies that have reduced upside for founders due to large university equity stakes.

In the UK's government's *Independent Review of University Spin-out Companies* published in November 2023, the authors recommend an expansion and targeting of support for founders to improve spinout outcomes. Specific recommendations include training on entrepreneurship and commercialisation, support for business-building activities, and access to professional service advisors.

Proportion of alive versus dead spinouts by total equity investment raised (2014-2023)



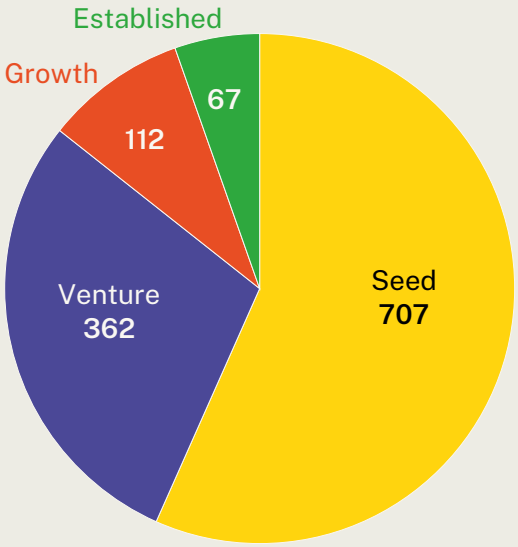
Spinouts cessations by year (2014-2023)



[6] Angus Baker, Daniel Robinson, and Ethan Yip, "Mapping Equity: A Closer Look at University Stakes in Academic Spinouts since 2011," Enterprise Hub Blog, Royal Academy of Engineering, 20 November 2023, accessed Mar 11, 2024, https://enterprisehub.raeng.org.uk/enterprise-hub-blog/mapping-equity.

Growth stages

Stage of evolution of active spinouts (snapshot January 2024)*



*Excludes zombie stage of evolution

As of January 2024, the UK boasts 1,248 active spinouts, with 707 (56.7%) of them in the seed phase, a figure closely aligned with the 56.5% recorded in January 2023. This consistency indicates a steady influx of new, innovative firms at the initial stage of development, which could evolve into key players for future expansion. Overall, the number of companies in the venture (362), growth (112), and established (67) stages remains similar to last year's cohort. This includes Oxford Photovoltaics, a developer of solar cells that can be printed on glass, such as building windows. Based in Oxfordshire, the University of Oxford spinout was incorporated in 2010 and has since received £119m in equity investment.

1,248
active UK spinouts (January 2024, excludes zombie stage of evolution)

56.7%
active UK spinouts at the seed-stage (January 2024, excludes zombie stage of evolution)

Fastest-growing spinouts

The academic spinouts highlighted on this page have exhibited the largest Compound Annual Growth Rates (CAGRs) in their turnover or headcount as reported in their financial accounts for the past three years. Alloyed and PhoreMost exhibited the greatest turnover growth, having grown their revenue by a CAGR of 135% and 92.3% respectively. Meanwhile, Abselion and MoniRail demonstrated the greatest increase in CAGR by headcount, both having increased by 71%. All four of these companies have demonstrated the ability to grow rapidly, having significantly expanded their operations over the past three years.

Alloyed

CAGR (turnover): 135%
Turnover (FYE 2023): £6.68m
Headcount (FYE 2023): 15
Sector: Materials technology

Alloyed designs, develops, and manufactures alloy components for a range of use cases, including electrical and medical components. The company spun out of the University of Oxford in 2017. To date, it has raised £45.2m in equity investment via four rounds and received £7.19m in grant funding.

PhoreMost

CAGR (turnover): 92.3%
Turnover (FYE 2023): £473k
Headcount (FYE 2023): N/A
Sector: Life Sciences

Spun out from the University of Cambridge, PhoreMost is developing technology for discovering targetable sites on cells or microbes that are involved in diseases. Founded in 2014, the Cambridgeshire firm has raised £51.1m via five rounds of equity funding and received £1.74m in grant funding.

Abselion

CAGR (headcount): 71%
Turnover (FYE 2023): N/A
Headcount (FYE 2023): 15
Sector: Nanotechnology

Spun out from the University of Cambridge, Abselion develops nanotechnology, which is used in biosensors and aims to provide quick detection for medical and hygiene issues. Founded in 2017, the Cambridge company has raised £3.05m via two rounds of equity funding and received £331k in grant funding.

MoniRail

CAGR (headcount): 71%
Turnover (FYE 2023): N/A
Headcount (FYE 2023): 5
Sector: Analytics, insight, tools

MoniRail develops an inertial measurement unit and data analysis tool for the rail sector. The University of Birmingham spinout aims to prevent faults by measuring train conditions and performance. Since its incorporation in 2018, MoniRail has raised £960k via seven equity deals.

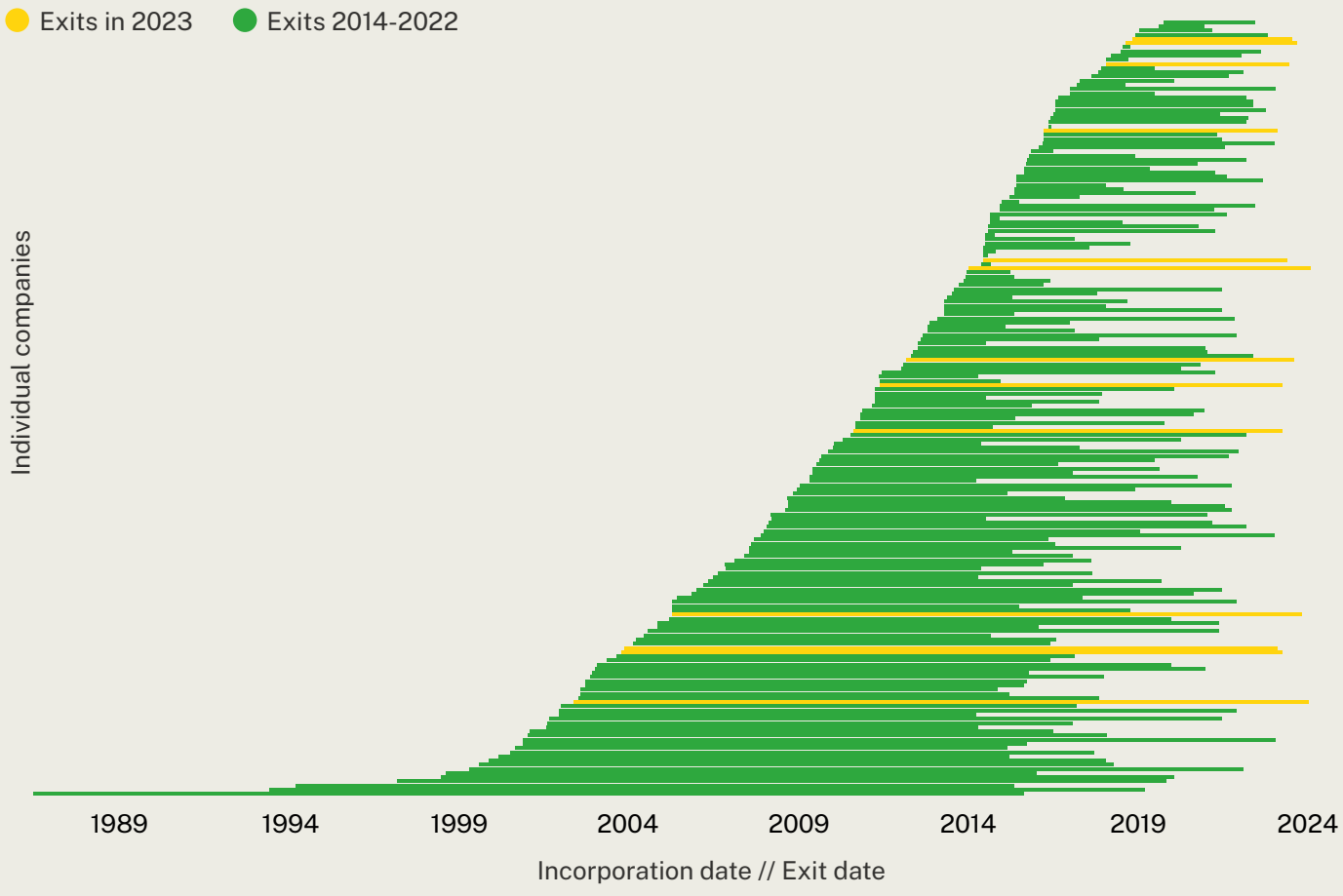
Exit volumes

Between 2014 and 2023, a total of 188 spinouts achieved successful exits, either through acquisition or by going public via an IPO. The majority, or 84.0%, of these exits occurred through acquisitions, while the remaining 16.0% took the IPO route. In 2023, there were 14 exits, marking a slight increase from the 13 recorded in 2022, with acquisitions accounting for all of the exits. This trend towards acquisitions over IPOs may be due to companies opting to hold off on going public, possibly in anticipation of more favourable market conditions. Notable among the 2023 exits was the University of Edinburgh's spinout, eoSurgical, a developer of surgical training simulators, which was acquired by the Bristol-based Limbs & Things.

30
exits by spinouts via IPO
(2014-2023)

158
exits by spinouts via acquisition
(2014-2023)

Exits by spinouts via IPO or acquisition (2014-2023)



Top exits

Top IPOs undergone by spinouts by market capitalisation (2014-2023)

Oxford Nanopore Technologies	£3.38b
Exscientia	£2.38b
Orchard Therapeutics	£950m
Immunocore	£806m
Adaptimmune	£772m
Intelligent Energy	£639m
Circassia	£581m
Achilles Therapeutics	£529m
Autolus	£498m
Freeline Therapeutics	£476m
MeiraGTx	£304m
Arcturis Data	£225m
Kainos	£164m
Oxford BioDynamics	£136m
Xeros	£80m
Abzena	£78m
Diurnal	£75m
Oncimmune	£66m
Mirriad	£63m
Redx Pharma	£55m

Top acquisitions of spinouts by company value or consideration paid (2014-2023)

Ziylo	£623m
Gyroscope Therapeutics	£588m
MiroBio	£356m
NaturalMotion	£320m
Base Genomics	£315m
Inivata	£280m
Heptares	£259m
Oxitec	£103m
Quethera	£85m
Atopix	£64m
Process Systems Enterprise	£58m
Cobalt Light Systems	£40m
VocalIQ	£39m
Permasense	£31m
Cambridge CMOS Sensors	£30m
Haemostatix	£28m
Flusso	£28m
The Floow	£24m
Bloomsbury AI	£23m
Cizzle Biotech	£21m

Chapter 4

Leadership

Gender of founders and directors

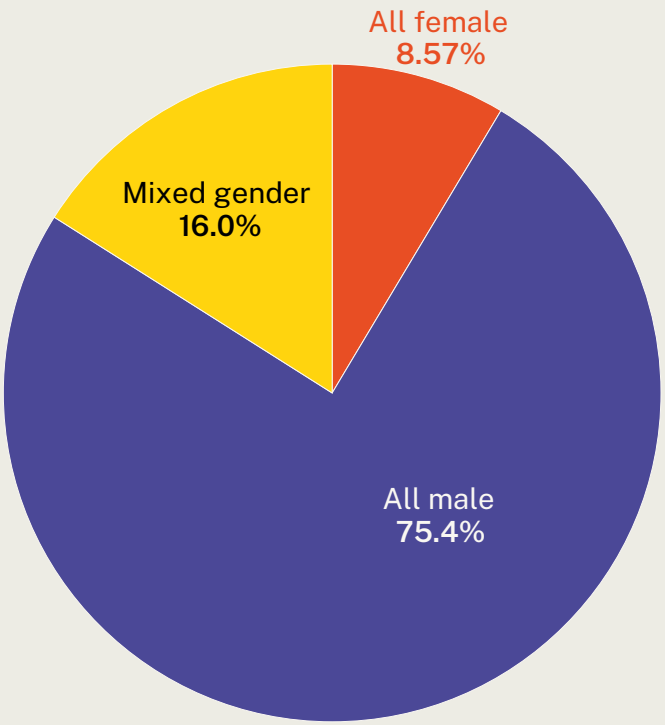
Most active spinouts have founder or director teams comprised entirely of men. This is also true of the broader population of high-growth companies, where 74.9% of companies have teams of only male founders and 59.3% have all-male directors. The prevalence of all-male founder and director teams is remarkably similar across the spinout and broader high-growth company populations.

High-growth companies are more likely to have all-female founding teams compared to spinouts, with 13.0% of high-growth companies having only female founders compared to 8.57% for spinouts. While this may seem concerning, the overall proportion of companies that have at least one woman founder is comparable between the two populations: 24.6% for spinouts compared to 25.1% for high-growth companies. As a result, spinouts are more likely to have mixed-gender founding teams (16.0%) compared to the general high-growth population (12.1%).

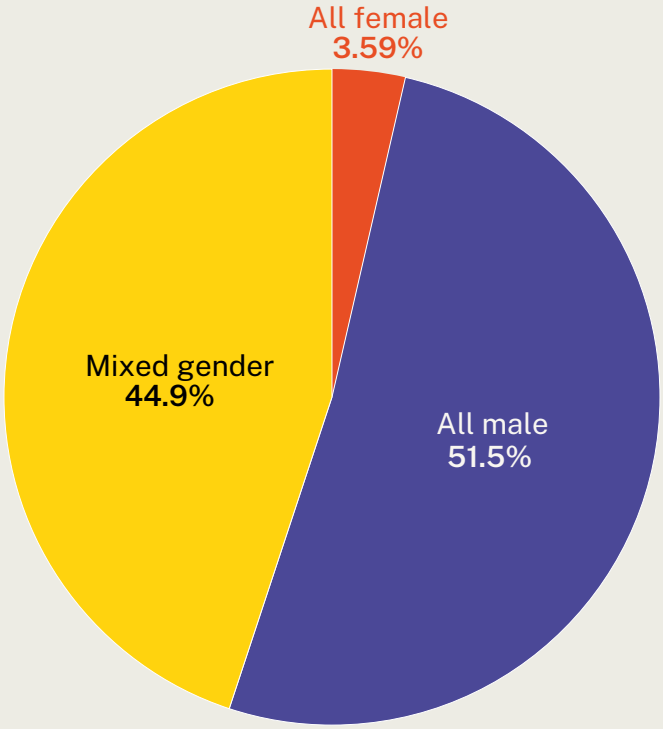
Since last year, there has been a slight increase in the proportion of companies with all-female founder and director teams. However, the overall data indicates that women are underrepresented as part of founder and director teams for both spinouts and the high-growth company population more generally.

The analysis excludes companies where one or more founder or director genders are unknown (18.5% of all spinouts by the gender of founders and 27.7% for directors).

Active spinouts by gender of founders (January 2024)



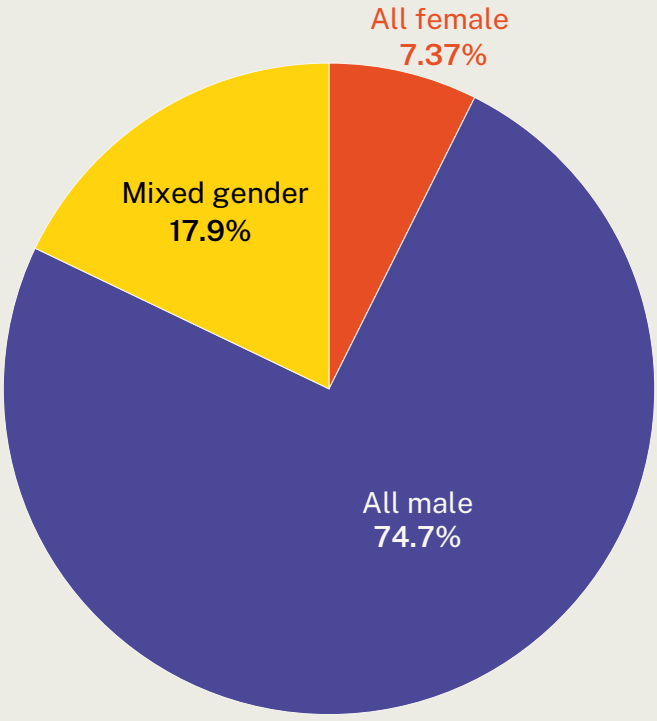
Active spinouts by gender of directors (January 2024)



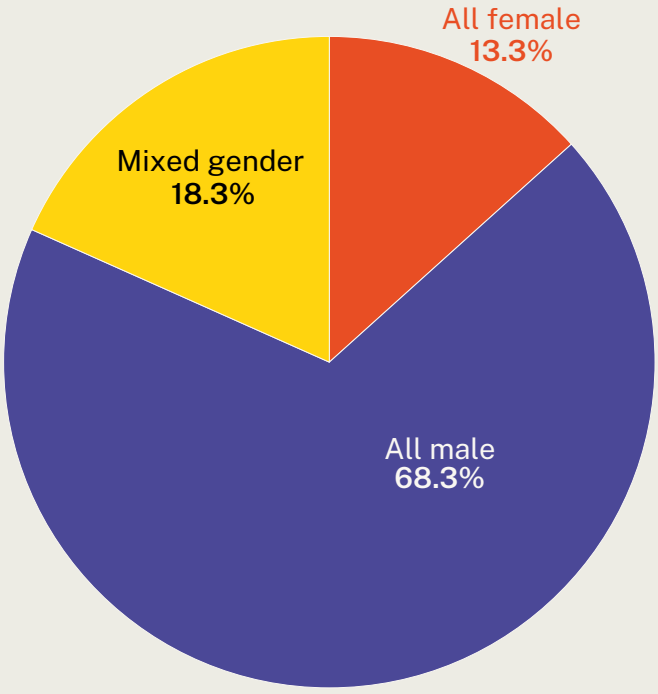
Gender of founders over time

The following charts compare the changes in gender diversity of active spinout founders from companies incorporated in 2017 and 2022. A significant rise in the share of founding teams composed entirely of women is observed, increasing from 7.37% in 2017 to 13.3% in 2022. This reflects a growing presence of female entrepreneurs in the sector, alongside a slight uptick in the percentage of founding teams with both male and female members, from 17.9% to 18.3%. The trends suggest a positive movement towards greater gender diversity among spinout founding teams, although there remains potential for further progress. This analysis reflects the companies for which founder gender diversity data is complete; spinouts where one or more founder genders were unknown were excluded from the analysis (30.1% of spinouts in 2017; 26.8% in 2022).

Spinouts by gender of founders (spinouts incorporated in 2017)

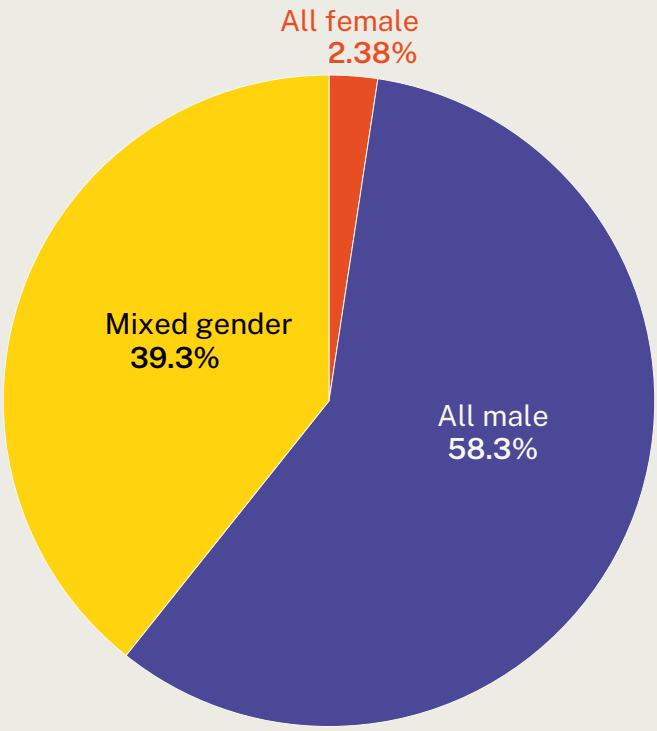


Spinouts by gender of founders (spinouts incorporated in 2022)

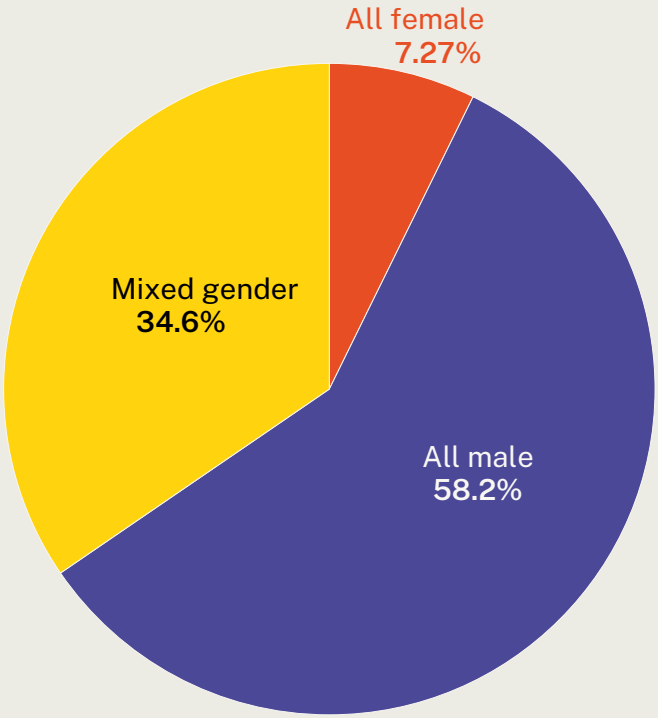


Gender of directors over time

Spinouts by gender of directors (spinouts incorporated in 2017)



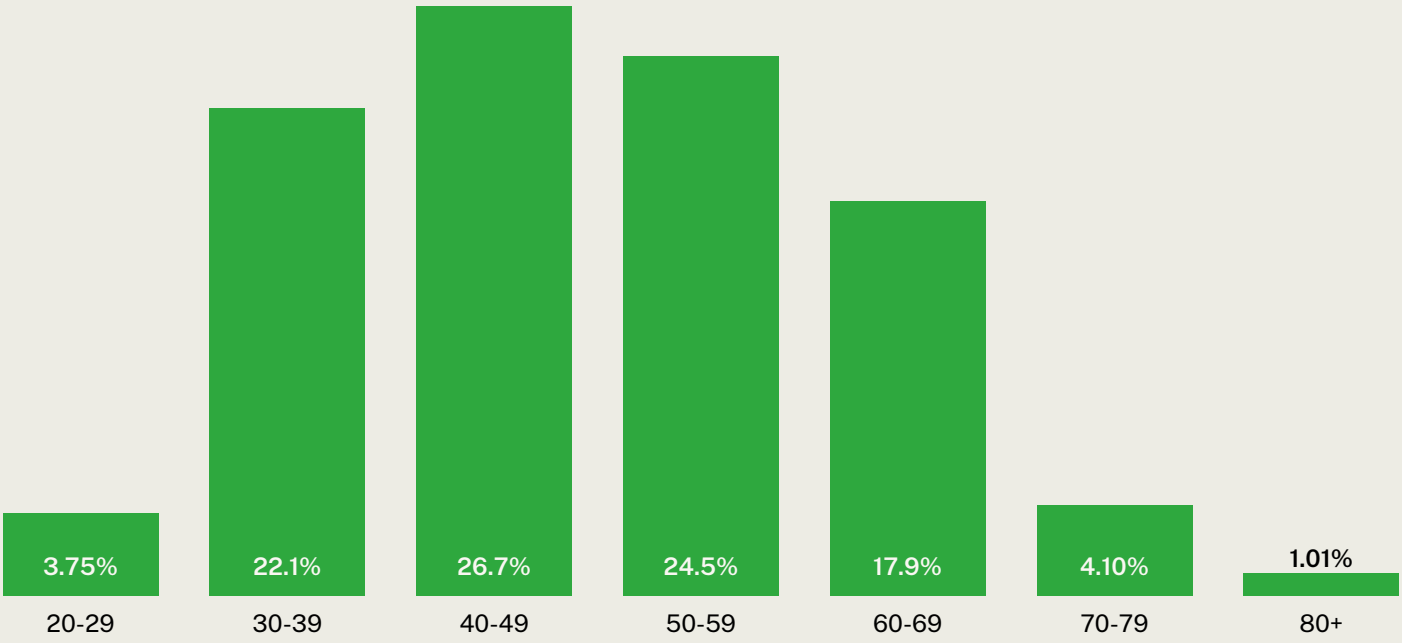
Spinouts by gender of directors (spinouts incorporated in 2022)



These figures compare the changes in the gender diversity of active directors of spinouts incorporated in 2017 and 2022. Similar to the findings on the gender diversity of founders, there has been a noticeable increase in female representation within directorship roles. The percentage of directorship teams entirely composed of women rose from 2.38% for spinouts established in 2017 to 7.27% for those established in 2022. This growth in female-only directorship teams coincides with a reduction in the percentages of mixed-gender and all-male directorship teams. Although this shift marks progress towards more diverse boards, it indicates that the pace of change at the directorship level is more gradual compared to that within founders. This analysis reflects the companies for which director gender diversity data is complete; spinouts with one or more directors of unknown gender were excluded from the analysis (38.2% of spinouts in 2017; 32.9% in 2022).

Age of founders

Age of founders of spinouts (snapshot January 2024)



49.1
mean age of active spinout founders

48.0
median age of active spinout founder

The analysis compares the ages of active founders in academic spinouts with those in the wider high-growth company sector. Founders aged between 40 and 49 are the most prevalent in both categories, making up 26.7% of spinout founders and 22.9% of those in high-growth companies. Notably, academic spinouts feature a larger share of younger founders, with 22.1% in the 30-39 age group, slightly higher than the 17.5% seen across all high-growth companies.

Additionally, the data reveals that 3.75% of spinout founders are aged 20-29, slightly higher than the 3.04% observed among high-growth company founders. This suggests that academic settings offers a conducive environment for young entrepreneurs to innovate and commercialise new ideas, leveraging the supportive network and resources available.

Nationalities of directors

Top 20 nationalities by number of directors of spinouts–excluding UK (snapshot January 2024)

United States	307
Ireland	111
Germany	86
Italy	66
France	63
China	56
Australia	55
Spain	44
Netherlands	42
India	36
Canada	35
Greece	31
Belgium	21
Switzerland	16
Sweden	16
Norway	15
Denmark	15
South Korea	14
Poland	12
Malaysia	12
Japan	12

1,223
directors of UK spinouts with foreign nationality (January 2024)

3,026
directors of UK spinouts with UK nationality (January 2024)

In UK spinouts, foreign directors are most frequently from the United States, with 307 directors representing 15.1% of all spinout directors with a non-UK nationality. The appeal for US citizens may stem from the shared language and cultural connections with the UK, enhancing the UK's attractiveness for American students and professionals.

Significant numbers within the international director community in UK spinouts also hail from European nations, including Ireland (111), Germany (86), and Italy (66). The geographical closeness of these countries to the UK plays a role, but a key factor is also the opportunity these individuals likely had to engage in research at some of the UK's globally recognised universities. Additionally, the UK's robust business ecosystem and regulatory environment can encourage international entrepreneurs to create and grow ventures within the country.

Chapter 5

Equity stakes and IP policy

Equity stakes methodology

The dataset analysed for the equity stakes section of the report comprised 1,880 spinout companies tracked by Beauhurst since 2011. Of these 1,880 companies, 390 were removed as the company was incorporated prior to 01/01/2010, and 624 were removed because no university entity held an equity stake. A further 58 businesses were omitted because the university held a stake >50%, leaving 808 analysable spinout companies. Some key methodological considerations are outlined under the headings that follow.

Institutional holdings versus captive funds

When an academic institution and its technology transfer office own shares in a company, their shareholdings have been counted in aggregate as being the academic institution's equity stake. The stakes held by captive funds, such as Cambridge Innovation Capital (CIC), have been excluded because those stakes are received in exchange for external investment.

Reliance on confirmation statements

UK companies are required to file a confirmation statement once a year with Companies House. The confirmation statement provides a snapshot of a company's shareholders at the time of filing but does not necessarily account for changes to shareholdings that occur between filings. For example, a company could spin out, split equity between founders and the academic institution, and raise dilutive external investment in the space of a year. While in practice this may only apply to a maximum of 27% of spinouts, these cases would make the founder and institutional stakes smaller in the first confirmation statement than the stakes had actually been at the point when the company spun out.

Spinouts without university shareholders

An academic institution does not necessarily have to have an equity stake in a company for the company to be considered a spinout (please see page 53 for a definition of a spinout). An academic institution may choose to license IP to a company without taking equity. Out of the cohort of spinouts tracked since the beginning of 2011, there are 624 that do not appear to have had an academic institution as a shareholder and have been excluded from the analysis.

Exclusion of majority institutionally owned companies

In the case of 58 (3.09%) companies out of the 1,880 businesses analysed in our sample of spinouts, the academic institution holds more than 50% of the equity. For newer spinouts, this may be due to the time lag between a company spinning out and filing a subsequent confirmation statement where the institutional stake has been reduced to below 50%. Because these companies are nominally subsidiaries of the institution, they have been excluded from this analysis. This figure is different from last year, when 3.20% of companies were excluded for this reason.

No provision for option pools

The equity stakes in this analysis do not account for option pools that may exist at the spinout. The stakes we have used represent the present truth of the company's capitalisation table, but if an options pool exists, the technology transfer office and founders will likely anticipate this dilution.

Founder equity split calculation

The founders' equity splits were calculated from the entire founding team's figures instead of analysing individual founder statistics. This is because founder teams can differ in size, causing their stakes to vary considerably. As such, assessing these stakes individually would not present the whole picture.

University and founder stakes

Average university equity stakes for 809 companies tracked since 01/01/2011 and incorporated since 01/01/2010

22.8%
mean stake taken in the year of spinning out

20.2%
median stake taken in the year of spinning out

14.4%
standard deviation in mean stake taken in the year of spinning out

Average founder equity stakes for 809 companies tracked since 01/01/2011 and incorporated since 01/01/2010

54.1%
mean stake taken in the year of spinning out

54.0%
median stake taken in the year of spinning out

23.4%
standard deviation in mean stake taken in the year of spinning out

This report analyses average and median equity shares held by founders and universities at the time of spinout formation. The results for this year closely mirror those from last year's report despite incorporating data from 81 additional companies that have either recently submitted shareholder confirmations or have been newly recognised as spinouts.

The data has a symmetrical distribution, which accounts for the similarity between the mean and median stakes for both founders and universities. Since this analysis is based on Companies House filings, there's an inherent delay in capturing any shifts in equity distribution practices among spinouts. Nevertheless, the consistency in data across the two years indicates that the approach to dividing equity in spinouts across the UK has remained stable throughout 2022 and 2023.

University stakes by company type

Median university equity stakes for companies tracked since 01/01/2011 and incorporated since 01/01/2010 by company type

21.7%
median stake taken in hardware companies in the year of spinning out

20.0%
median stake taken in software companies in the year of spinning out

21.2%
median stake taken in life sciences companies in the year of spinning out

Number of companies tracked since 01/01/2011 and incorporated since 01/01/2010 by company type

390
hardware companies

545
software companies

586
life sciences companies

The *Independent Review of University Spin-out Companies* recommends that universities, founders, and investors develop guidance on spinout equity distribution based on whether the company operates in hardware and engineering, software, or life sciences.[7] The *Review* suggests universities should take lower equity stakes in spinouts in less IP-intensive areas such as software.[8]

Examining the data for the cohort of companies with known university shareholders shows a consistent approach to university equity allocation across company types. This finding suggests most universities employ a similar approach to equity distribution regardless of the specific resource demands or IP-intensiveness that different types of companies may have. While the mean figures show more variation than the medians, the figures are close to the overall mean of a 22.8% equity stake taken by universities, suggesting only modest variation by company type. Life sciences has the highest mean university stake of 24.1%, followed by software at 23.1%, and hardware at 21.4%. Notably, the mean and median university stake taken has remained consistent over the past decade; this underscores a stable approach in equity allocation practices among universities.

[7] Irene Tracey and Andrew Williamson, Independent Review of University Spin-Out Companies (London: Department for Science, Innovation and Technology and HM Treasury, 2023), 6, accessed March 13, 2024, https://www.gov.uk/government/publications/independent-review-of-university-spin-out-companies.
[8] Tracey and Williamson, Independent Review, 6.

Equity stakes of universities

Spinout equity stakes taken by academic institutions tracked since 01/01/2011 and incorporated since 01/01/2010

Academic Institution	Mean	Median	Standard deviation	Eligible spinouts	Total spinouts
University of Oxford	20.4%	19.4%	13.7%	111	210
University of Cambridge	11.8%	10.0%	9.54%	61	149
Imperial College London	21.1%	10.9%	17.2%	54	124
University College London	15.9%	11.7%	12.4%	36	93
University of Manchester	30.8%	30.0%	10.0%	39	86
University of Bristol	19.6%	18.1%	15.5%	29	76
Royal College of Art	6.30%	5.00%	3.12%	15	72
University of Edinburgh	13.8%	15.0%	6.79%	21	66
Swansea University	17.0%	15.0%	6.47%	21	57
Queen's University Belfast	32.7%	33.3%	11.9%	27	56
University of Strathclyde	14.2%	20.0%	7.87%	16	48
University of Warwick	27.4%	29.4%	14.6%	28	47
University of Sheffield	25.0%	25.4%	11.9%	14	45
University of Nottingham	26.9%	25.0%	18.4%	18	39
University of Leeds	43.3%	49.0%	8.38%	21	38
University of Glasgow	32.1%	30.7%	11.2%	19	38
Newcastle University	30.6%	32.8%	12.5%	20	38
University of Birmingham	29.4%	33.9%	14.6%	16	34
University of Exeter	15.5%	17.4%	7.61%	13	26
University of Ulster	28.9%	25.0%	11.3%	13	25
University of Aberdeen	27.6%	26.0%	12.4%	9	23
King's College London	22.9%	20.3%	10.5%	11	18

Although the Royal Academy of Arts placed seventh on this ranking, it has been excluded from this analysis as there is a lack of data available for its spinouts.

Average university stakes

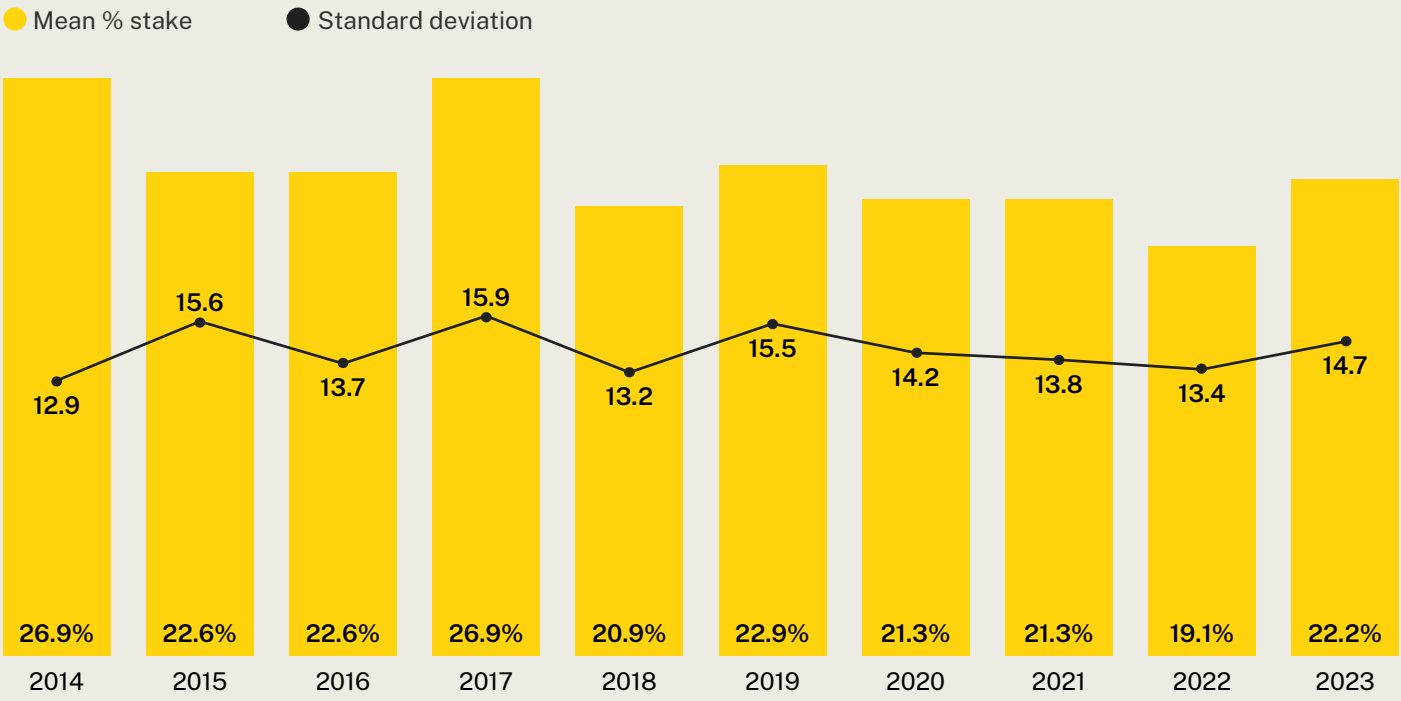
The mean stake taken by a university during spinout formation increased from 19.1% in 2022 to 22.2% in 2023. The 2022 annual mean remains the lowest for the decade. Despite the slight increase in mean stake in 2023, the annual mean stake has decreased by 17.5% over the last decade from 26.9% to 22.2%. The growing attention on spinout equity distribution between founders and universities may be altering universities' attitudes towards equity allocation.

Beauhurst's spinout shareholder dataset is dynamic, frequently updating as new spinouts and shareholder data from Companies House become available. Consequently, average equity stake figures for previous years may exhibit minor fluctuations. The average stakes in this year's *Spotlight on Spinouts* report differ slightly from earlier editions, highlighting the dataset's constantly evolving nature.

17.5%
decrease in the mean equity stake taken by universities (2014-2023)

22.8%
mean stake taken by universities in spinouts (2014-2023)

Mean stake taken by universities in spinouts (2014-2023)



University IP policies

This summary outlines the intellectual property policies of selected universities, as highlighted in this report, demonstrating the diverse strategies these institutions adopt.

For example, Imperial College London's Founders Choice scheme allows academic founders to maintain up to 95% of the founding equity. Meanwhile, the Royal College of Art employs a bespoke negotiation process, customising equity shares according to each company's specific circumstances and the contributions of its founders.

Other universities opt for a uniform approach, implementing standard equity share practices across all their spinouts.

The data presented is sourced from the universities' official websites, their published IP policies, and, in some instances, through direct communication with the university. The IP policy sourcebook can be found on page 51.

University of Oxford

Oxford University Innovation is the University of Oxford's technology transfer and innovation arm, responsible for negotiating equity with researchers in new spinout projects. Starting in September 2021, the university began implementing a new equity-sharing policy — a change made to streamline the negotiation process and make spinout formation more straightforward and transparent [1]. Under the policy, and in most cases, the founding researchers will receive 80% of the equity share in the spinout company, with the University receiving the remaining 20%. However, in a few cases, the researchers will receive 90% of the company's equity, and the university will receive 10% [2].

University of Cambridge

The University of Cambridge initiated its seed funding program as part of Cambridge Enterprise in 1995 and has since been involved in over 145 spinout deals [3]. The entity outlines equity distribution between the founding researchers and external management to be negotiated on an individual basis with Cambridge Enterprise. Various elements, such as the type of technology being licensed and the number of founders, play a role in determining the final agreement [4].

Imperial College London

Imperial College London supports the commercialisation of the institution's technology transfer through its Enterprise team. Prior to this, technology transfer was handled by Imperial Innovations, which was established in 1986 and became listed on the London Stock Exchange's Alternative Investment Market in

University IP policies

2006 [5]. In August 2023, Imperial College London announced significant enhancements to its Founders Choice program. Academic founders now have the opportunity to retain up to 95% of founding equity with favourable terms such as low fixed royalty rates and simplified IP development planning. Imperial will take a limited equity stake in new spinouts, offering both non-dilutable and dilutable equity options. Royalties on sales exceeding £50m are set at fixed rates, with sub-licensing royalties fixed at 10% [6].

University College London

University College London University College London's technology transfer office, UCL Business (UCLB), was established in 2006 to support the commercialisation and formation of spinouts. UCLB has introduced a new IP scheme, named Portico Ventures, with the aim of creating a straightforward framework focused on founders for licensing non-patentable IP [7]. The programme provides a founder-centric option where the University retains a 5% stake once the company has received £1m in equity investment. Founders requiring more support will cede a 10% fully diluted equity stake to the University in exchange for UCLB's assistance [8].

University of Manchester

The University of Manchester offers commercialisation support through The Innovation Factory. The equity stakes held by the university and the founders depend on several factors, including the method used to commercialise the IP and the amount of proof-of-concept funding received. However, the default equity division would cede the University 35% of shares, with founders retaining 50% [9].

University of Bristol

The University of Bristol offers a comprehensive spinout formation policy outlining the expected equity shares based on the University's and researcher's contributions [10]. This process is overseen by the University's commercialisation arm. The policy concurs that, in cases where no development has taken place, and no University support is necessary, the University will hold a 15% stake, while the rest will go to the founders. On the other hand, if there have been development activities and additional support is needed, the University will hold a 45% share of the company, with the researchers retaining the remaining 55%.

Royal College of Art

The Royal College of Art's portfolio of spinouts is overseen by its centre for entrepreneurship, Innovate RCA [11]. Where a company is formed to bring the institution's IP to the market, the equity share granted to the founders is determined through individual negotiations on a case-by-case basis [12]. The decision is based on multiple considerations, including the current stage of the project and the investor's contribution.

University of Edinburgh

The University of Edinburgh's commercialisation arm, Edinburgh Innovations, provides support to academic spinouts across the institution. Further support opportunities may also be provided through the University's in-house venture fund, Old College Capital [13]. The University expects to hold an equity position equal to that of the founders; however, the final equity

University IP policies

stakes will be determined based on various factors such as the IP, involvement of individual researchers, and investment in the project prior to the formation of the company [14].

Swansea University

Swansea University has spun out 57 companies since starting to create spinouts at the beginning of 2011 [15]. These spinouts have been able to raise a significant amount of capital, amounting to £51.9m via 65 different funding rounds [16]. As a standard practice, the University claims to take a 5-20% stake in these spinout companies [17].

Queen's University Belfast

Queen's University Belfast manages its portfolio of spinouts through its commercialisation office — QUBIS [18]. QUBIS initiates equity negotiations with an initial concept of equal distribution between the University and the spinout's founders. However, this is subject to further revision based on factors such as the team's previous and projected contributions, as well as the existence of any valuable know-how or patented IP [19]. This approach aims to establish a framework that acknowledges and rewards value-generating efforts.

University of Strathclyde

The University of Strathclyde's technology transfer office, Strathclyde Inspire, has been facilitating the commercialisation of research since 2002. Strathclyde Inspire's commercialisation program outlines that the University will hold a 20% equity stake after seed round funding, regardless of the seed round valuation [20]. This stake encompasses, among other things, both support provided by the University before its creation and cash awarded at the time of spinning out.

University of Warwick

Warwick Innovations commercialises innovations produced at the University of Warwick [21]. The entity oversees the research and innovation output of the institution and determines the distribution of ownership in spinout companies. When making this decision, factors such as the creative effort of the founders and the investment in terms of time, expertise, and resources are taken into consideration for the commercialisation of the IP [22].

Falmouth University

Falmouth University's Launchpad Venture Studio has been operational since 2013. It focuses on the development of startups, with a requirement that they be headquartered in Cornwall for a minimum of five years after incorporation [23]. The university's IP policy states that students generally retain ownership of intellectual property generated during their studies, except in cases where they are university employees or involved in sponsored research projects [24]. The policy does not reference an approach to equity in spinout companies.

University of Sheffield

The IP and Impact team in Research Services at the University of Sheffield manage spinout company creation, with equity distribution based on founder contributions to the IP, patent costs, industry

University IP policies

expectations, and the founding IP's value [25]. Generally, the University of Sheffield holds a 15%-20% share [26]. Sheffield is a founding university of Northern Gritstone, an investment company that aims to boost the commercialisation of university spinouts in northern England [27].

University of Southampton

Since 2000, the University of Southampton has spun out multiple companies and has since taken an equity position in 35 of them [28]. The Research and Innovation Services manage the University's commercial endeavours and determine the equity distribution to the founders of spinouts. The compensation method and extent are decided individually and are expected to be fair and balanced based on specific circumstances [29].

University of Nottingham

The University of Nottingham oversees its portfolio of spinout companies through its subsidiary, Nottingham Technology Ventures. Upon the formation of a commercially successful spinout, the initial equity distribution awards the founders with 50.1% ownership of the business, while the University retains a 49.9% share [30]. These shares can be altered in certain circumstances, such as when the founders are granted additional equity options for their role in the company's growth.

University of Leeds

The Research and Innovation arm at the University of Leeds is responsible for evaluating and managing IP. Since 1995, it has enabled the institution to spin out over 110 companies, converting academic research into commercial success for many businesses. The University outlines two methods for determining the initial equity division in spinout companies before external funding. If the spinout is based on IP, the founders will receive less than a 40% stake. If the spinout company provides services, founders will receive a stake between 40% and 60% [31].

University of Glasgow

The University of Glasgow actively oversees and supports spinout ventures through its commercialisation arm — Research Strategy and Innovation Office. The University has recently updated its equity policy, taking a more flexible approach to equity division. The University never takes more than a 30% founding stake. The University of Glasgow also protects the right of founders to negotiate to reduce the University's equity stake [32].

Newcastle University

The Business Development and Enterprise unit at Newcastle University supports the decision-making and management of IP licensing within the institution and has aided multiple spinout companies in commercialising their research [33]. The University's IP policy states that the University will typically hold a 40% equity stake in any spinout at formation, with the founders being awarded the remaining 60%.

IP policy sourcebook

The University of Oxford
[1] Oxford University Innovation - Equity Sharing
[2] Oxford University Innovation - Equity Sharing

The University of Cambridge
[3] University of Cambridge Enterprise - Seed Funds
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[5] Imperial Innovations - Imperial College London takes entrepreneurship to next level
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[7] UCLB - UCLB News
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[9] The University of Manchester - Intellectual Property Policy

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[10] University of Bristol - Policy on Spinout Company Formation

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[11] Royal College of Art - Innovation RCA
[12] Royal College of Art - Policy on Ownership, Protection and Exploitation of Intellectual Property Rights

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[13] Edinburgh Innovations - Old College Capital
[14] University of Edinburgh - Spinout Support Guide

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[15] Beauhurst Data
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[17] Freedom of Information request - WhatDoTheyKnow.com

Queen's University Belfast
[18] QUBIS - About Us
[19] Queen's University Belfast - IP Policy

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[21] Warwick Innovations - About
[22] University of Warwick - Intellectual Property

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[23] Falmouth University - Regulations, Policies & Procedures for Students
[24] Falmouth University - Intellectual Property (IP)

University of Sheffield
[25] University of Sheffield – Governance documents, Intellectual Property policy
[26] University of Sheffield – Andrew Hogben, Head of Impact and Intellectual Property
[27] University of Sheffield – Northern Gritstone

University of Southampton
[28] University of Southampton - Spinouts
[29] University of Southampton - Intellectual Property Regulations

University of Nottingham
[30] University of Nottingham - IP Policy

University of Leeds
[31] The University of Leeds - IP Policy

University of Glasgow
[32] The University of Glasgow

Newcastle University
[33] Newcastle University - Intellectual Property for Employees

Appendix

Full methodology

Beauhurst tracks all spinouts deemed to have spun out on or after 1 January 2011. Spinning out from an academic institution is one of our eight triggers (outlined on the right) that we believe suggests a company has high-growth potential. More detail on Beauhurst's tracking triggers is available via our website. Companies that spun out of an academic institution prior to 1 January 2011 may still be included in this report if they achieved one of the other seven triggers after 1 January 2011 and then were subsequently determined to be a spinout.

Equity investment

To be included in our analysis, any investment must be:

- Secured by an academic spinout (defined below)
- Some form of equity investment
- Secured by a non-listed UK company
- Issued between 1 January 2014 and 31 December 2023

Beauhurst's equity investment dataset is constantly updated with historical deal activity, causing slight fluctuations and minor discrepancies between annual investment and deal totals in the *Spotlight on Spinouts* reports.

Academic spinouts

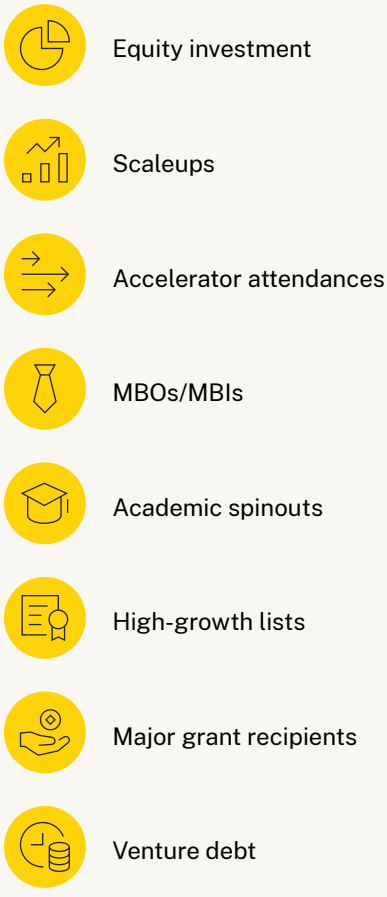
We define an academic spinout as a company that meets condition 1 and at least one condition out of 2-4:

1. The company was set up to exploit IP developed by a recognised UK university or research institution (this is broadly in line with the Higher Education Statistics Agency's (HESA) definition of a spin-off)
2. The institution owns IP that it has licensed to the company
3. The institution owns shares in the company
4. The institution has the right (via an options or warrants contract) to purchase shares in the company at a later date

Innovation grants and equity stakes

Beauhurst's spinout shareholder and grant datasets continually update with new data from Companies House and newly discovered spinouts or awards. Consequently, average equity stakes, total grant figures, and grant numbers for previous years exhibit minor fluctuations.

High-growth tracking triggers



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