THE PRODUCTIVITY INSTITUTE

UKRI Economic and Social Research Council

THEMATIC GUIDE 7

R&D and Innovation:

Driving Regional Productivity Through Research and Innovation

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Date:

November 2025

The Productivity Institute
Midlands Productivity Forum Thematic Guide 7

Note: This guide builds on the Midlands Insight Report published by The Productivity Institute in January 2025. It includes extended analysis, updated case studies, and new policy recommendations that were not part of the original publication.

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Key words

Midlands, R&D, innovation diffusion, regional productivity, innovation ecosystem, research commercialization, skills for innovation

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Acknowledgements

We would like to express our gratitude to the following field experts for their invaluable local insights on various aspects of specific challenges, initiatives and policies, which have significantly enriched this report:

- Helen Turner, Midlands Innovation
- Lisa Smith, Midlands Mindforge
- Nicole McGlennon, Health Innovation East Midlands
- Sarah Windrum, HORIBA MIRA Technology Park
- Huw Edwards, Loughborough Business School
- Thomas Butterfield, Local ONS in Midlands

Additional thanks to the members of the Midlands Productivity Forum (RPF) for their contributions during the interactive session on identifying and prioritising productivity challenges. Their insights and engagement have been invaluable in shaping this report.

Suggested citation

Mazhikeyev, A., Godsell, J., Driffield, N., Duck, J., & Triebs, T. (2025). R&D and Innovation: Driving Regional Productivity Through Research and Innovation. Thematic Guide No. 7, Midlands Productivity Forum, The Productivity Institute.

The Productivity Institute is an organisation that works across academia, business and policy to better understand, measure and enable productivity across the UK. It is funded by the Economic and Social Research Council (grant number ES/V002740/1).

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Introduction

The Midlands is a home to a variety of R&D clusters, manufacturing sectors, and academic institutions. Yet, despite these strengths, the region continues to grapple with significant challenges in receiving necessary R&D funding, reflected in persistent regional inequalities. This divide is particularly stark when comparing the Midlands to the **so-called "Golden Triangle" of London, Cambridge, and Oxford, where concentrated investments in public and private research and development** have driven a higher rate of innovation and growth. In contrast, R&D investments in the Midlands have remained insufficient, exacerbating disparities in firm productivity, employment quality, and economic growth.

> "*We have phenomenal technology on our patch with the potential for global impact—what's holding us back is capital.*"
>
> Helen Turner, Midlands Innovation, 2024

The root causes of the Midlands' productivity gap can be attributed to multiple interrelated factors. First, the region's relatively low levels of **R&D investment** are because Governments Gross **Expenditure on R&D (GERD) is low**. GERD as a percentage of GDP for UK is around 5% (and this is including UKRI funding) while the same figures for the EU and the US are 11% and 17% respectively. This is limiting the private sector engagement, and the generation of new technologies, patents, and innovative business solutions. Despite this struggle, in the Global Innovation Index for 2022 the UK is no 4. Additionally, the presence of many SMEs in the West Midlands economy has been cited as contributing to a "drag effect" on overall productivity, due to limited scale and capacity for innovation and not finding it worthwhile [3]

The challenge is further complicated by regional **inequalities in public funding allocations**. According to recent data (Figure 1), the Midlands receives disproportionately low levels of government and UKRI R&D funding compared to regions such as London, the South East and East of England. **Even if East and West Midlands combined their share is still lesser than the Southern regions**, and separately the shares lower than the national average. This disparity, along with a lack of effective knowledge transfer mechanisms between universities and local businesses, limits the region's potential for innovation-driven growth.

Figure 1: Regional breakdown of Gross Expenditure on R&D in 2022

Figure 1(a): The share received by regions (%)

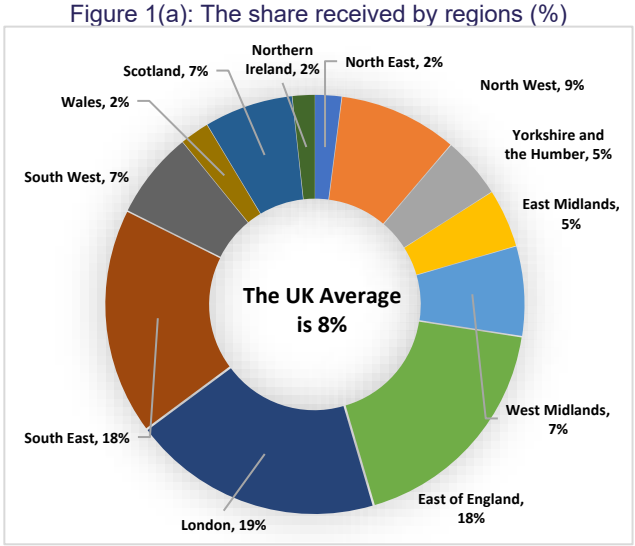
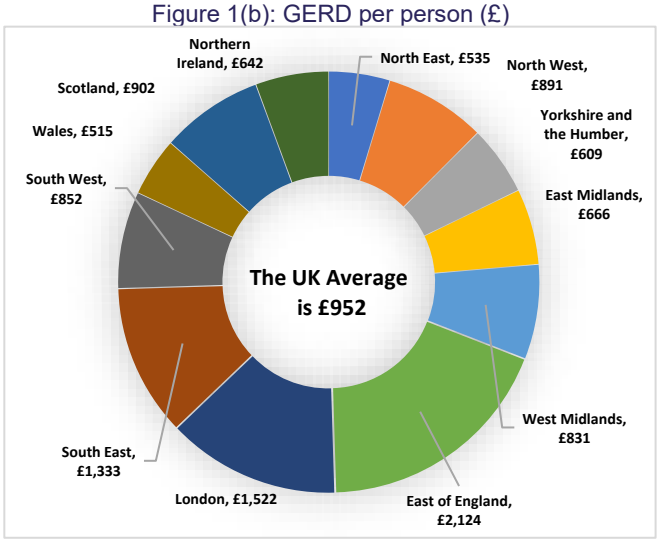


Figure 1(b): GERD per person (£)



Source: ONS R&D statistics
Note: The total GERD amount for 2022 is £70,698 in millions

The Midlands is also constrained by issues of workforce skills and firm-level management practices, both of which are central to enhancing productivity. A lack of investment in high-skilled labour, particularly in key sectors such as digital services and advanced manufacturing, hampers the region's ability to fully capitalize on R&D outputs. Furthermore, evidence shows that the area struggles to attract foreign direct investment (FDI) post-Brexit, which could otherwise stimulate productivity growth

Spinout Numbers and University Sizes

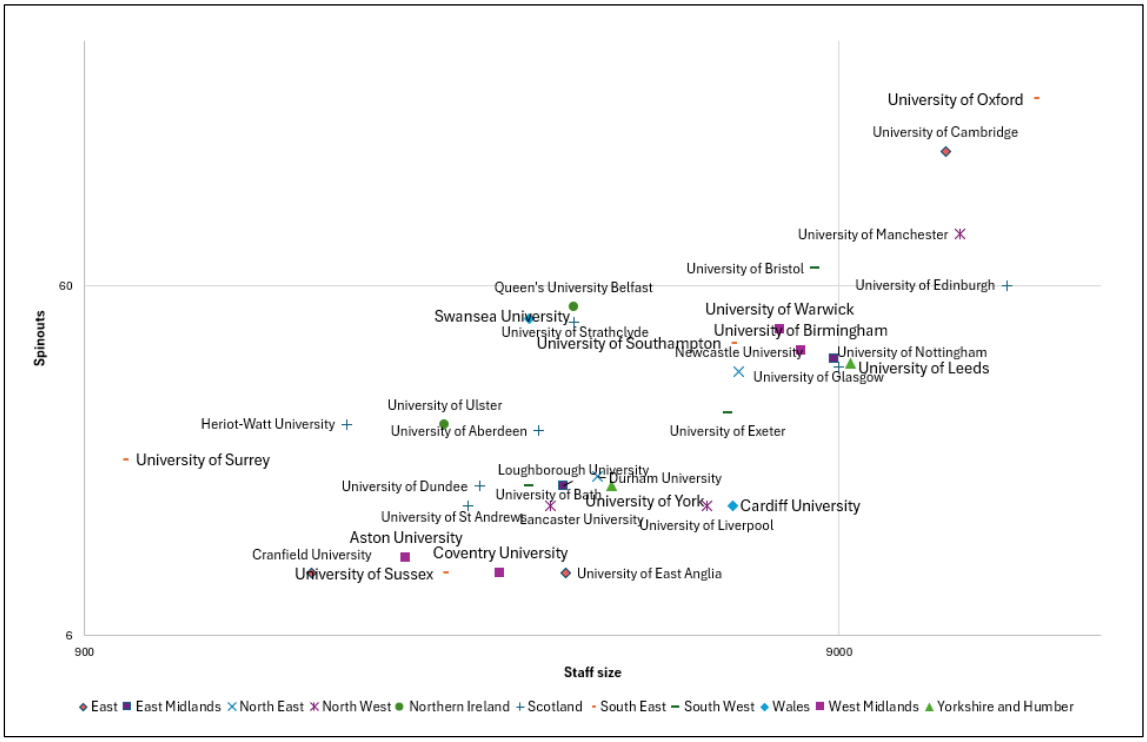
Comparing to the Golden Triangle universities, **the Midlands' universities produce far less spinouts in numbers, in sizes and in income generation potential**. This could be one of the reasons behind low R&D investments attracted into the region [13].

Figure 2 illustrates the relationship between university size (measured by staff numbers) and the number of spinouts produced, based on data from Beauhurst's 2023 Spinouts List. What we find is a clear trend: larger universities tend to generate a higher number of spinouts, with institutions like Oxford, Cambridge, and Manchester leading in both scale and output. What about universities from Midlands? Midlands universities such as Birmingham and Nottingham perform relatively well, while others—including Loughborough and Coventry—lag behind in spinout production despite having moderate staff sizes.

While major **Midlands universities collectively account for around 200 spinouts, the leading Golden Triangle universities produce more than 450 combined**. This significant difference, despite comparable research capacities, underscores the urgent need for greater late-stage R&D support, commercialization infrastructure, and access to growth capital in the Midlands.

This suggests that while scale matters, it is not the sole determinant of spinout success. Institutional strategy, access to early-stage capital, technology transfer support, and regional innovation ecosystems all play a role. The relatively modest spinout activity among some Midlands institutions highlights an opportunity for policy and investment to strengthen commercialization pathways and innovation diffusion within the region.

Figure 2: University size matters for spinouts



Source: Beauhurst's Spinouts List 2023 and staff size collected from university websites

Importance of Late R&D Stages and Innovation Adoption Habit:

Despite the Midlands' strength in generating high-quality university spinouts, **many of these ventures struggle to progress beyond the prototype or proof-of-concept stage due to a lack of dedicated late-stage R&D support**. In contrast to regions like the South East or the Golden Triangle—where mature investment networks and advanced commercialization infrastructure are more established—the Midlands faces persistent barriers in securing follow-on capital, accessing technical scaling facilities, and forging strong university-industry connections. This gap between research excellence and commercial realization creates a bottleneck in the regional innovation system. Overseas investors are increasingly drawn to UK research capabilities [1], but the **absence of local capital and scaling infrastructure often pushes Midlands-based innovations to commercialize elsewhere**. Strengthening the region's support for late-stage R&D—through targeted public-private funding, strategic knowledge transfer partnerships, and mission-led commercialization programmes—is critical to harnessing the full economic potential of Midlands research institutions.

This challenge is compounded by a broader issue of innovation adoption. **Many SMEs and even mid-sized firms in the Midlands exhibit slow uptake of emerging technologies, digital tools, or productivity-enhancing innovations**. This reluctance is partly **driven by resource constraints**, but also by **risk aversion** and **limited exposure** to innovation networks. Firms outside major innovation corridors often lack the absorptive capacity to engage with frontier technologies and struggle to translate research outputs into operational improvements [4]. The resulting slow diffusion of innovation dampens productivity growth, particularly in traditional manufacturing and logistics sectors that dominate parts of the Midlands economy.

Moreover, there is often a cultural and institutional gap between academic research outputs and the practical innovation needs of regional industries. While Midlands universities continue to perform strongly in research output metrics, the disconnect between technology producers and end-users limits the region's ability to foster cross-sector innovation adoption. Recent efforts to address these structural gaps have given rise to initiatives like Midlands Mindforge (Case study 1**)**, which offers a promising model for a regionally anchored innovation ecosystem. As discussed above, the **Midlands suffers not from a lack of research quality or ambition, but from a weak commercialization infrastructure and capital shortfall—especially at the late R&D stage**. Midlands Mindforge initiative, led by eight regional universities through the Midlands Innovation partnership, aims to replicate the ecosystem strengths of the Golden Triangle by pooling institutional research power, capital, and commercialization expertise into a unified £250 million investment platform.

In addition to Midlands Mindforge, the newly launched **Midlands Ecosystem Platform (midlands.dealroom.co)** provides an open-access digital gateway to the region's £31 billion innovation economy. It enables founders, investors, and policymakers to track spinouts, funding flows, and regional performance, enhancing transparency and collaboration within the Midlands innovation ecosystem.

Case study 1: Midlands Mindforge as a Midlands' own Golden Triangle model?	
Objective To establish a Midlands-focused innovation ecosystem, similar to the Golden Triangle, that accelerates university-led spinouts and attracts major investment. **Implementation** Formed by eight Midlands universities & Midlands Innovation, Midlands Mindforge is a £250 million open-ended fund aimed at deep tech, biotech, and life sciences ventures. It leverages the collective research power of the universities to foster commercialization and collaborates with local authorities to strengthen support pipelines. **Outcomes** By building 100 additional Spinouts, Mindforge is expected to create 33,000 jobs and generate £4 billion annually. Midlands Mindforge is positioned to drive sustainable growth by closing the funding gap and boosting regional competitiveness in high-impact sectors.	458 spinouts produced by the Golden Triangle vs 147 spinouts by Midlands's universities combined in 2023 Beauhurst, 2023

Fragmented R&D Ecosystem

Unlike the Golden Triangle, which benefits from dense and interlinked research and commercialization networks, the Midlands' R&D landscape remains fragmented. While the region hosts a growing number of industrial parks, science parks, and university incubators, these assets often operate in silos rather than as components of a unified innovation ecosystem [2]. Less than 10% of Midlands firms engage in collaboration with higher education institutions, significantly below the UK average for innovation-intensive regions. According to the Productivity Institute, one of the critical limitations to productivity growth in the Midlands is the lack of systematic integration between physical infrastructure, research institutions, and commercialization pathways. Despite substantial R&D assets—including innovation hubs at Warwick, Birmingham, and Nottingham—the region lacks coordinated mechanisms for scaling, co-investment, and innovation diffusion. As a result, promising technologies struggle to reach the market, and the spillover benefits of innovation remain unevenly distributed across sectors and geographies.

However, recent developments show signs of greater coordination. The UK Science Park Association (UKSPA) has established a Midlands Forum bringing together regional science park members to collaborate and cross-refer opportunities. Similarly, the West Midlands Regional Innovation Assets Network (WMRIAN) connects science parks and incubators across the West Midlands to promote joint working and retain investment in the region. During Birmingham Tech Week, nine Midlands science parks jointly showcased their facilities to international delegations—an encouraging signal that regional innovation assets are starting to work together and cross-refer opportunities.

In addition, the withdrawal of European Regional Development Fund (ERDF) programmes has left a gap in SME–university engagement mechanisms that previously supported collaboration through funded initiatives. Many universities, including Nottingham, Warwick, and Keele, have lost experienced staff or had to repurpose engagement roles due to this funding loss, reducing their capacity to connect SMEs with R&D opportunities.

Talents and Skills Drain from Midlands R&D sector

The Midlands' difficulty retaining high-level R&D talent significantly weakens its long-term innovation capacity. Brown [1] reports that London and the South East received over **70% of total foreign investment into university-led R&D** between 2018 and 2022—despite the presence of world-class research institutions in the Midlands. Midlands universities continue to produce a high volume of STEM graduates, but a 2023 Midlands Engine report [7] indicates that **over 40% of these graduates leave the region within five years**, largely due to a lack of high-value, innovation-intensive career opportunities. This **"skills drain"** limits the availability of experienced talent in frontier sectors such as green technologies, healthtech, and advanced engineering, stalling the region's innovation momentum.

These challenges are further compounded by the growing financial pressures facing universities across the region. Declining international student enrolments, rising operational costs, and changes in funding models have placed several institutions under strain—resulting in budget cuts, reduced research activity, and staff redundancies. Such conditions not only limit institutional capacity for R&D but also make it harder to retain top researchers and technical staff, many of whom seek more stable and better-funded roles in London, the South East, or abroad. This financial instability risks eroding the very foundation of regional innovation at a time when investment in research capabilities is most needed.

> "A lack of strategic oversight could lead to serious unintended consequences such as a complete loss of expertise or knowledge in certain R&D disciplines or areas of the UK."
>
> CaSE (2025)

Collaboration Culture

Collaboration between academia, industry, and local government remains inconsistent across the Midlands. While there are standout research centres and collaborative projects—such as Energy Research Accelerator or MTC in Coventry—these remain exceptions rather than the norm. The Higher Education Policy Institute report stresses that university-industry-government collaboration is a key driver of regional innovation and inward investment, yet many Midlands institutions still lack systematic engagement mechanisms [1]. Nevertheless, it is important to recognise that the Midlands already benefits from several strong and globally competitive university–industry collaborations. Long-standing strategic partnerships—such as the Rolls-Royce University Technology Centres (UTCs)—demonstrate the region's capability to deliver high-impact industrial research. Many universities also manage corporate partnerships through dedicated business engagement teams that take a strategic approach to fostering collaboration. Strengthening and scaling such formal innovation partnerships, alongside incentivising new multi-actor R&D consortia, would reinforce a culture of applied innovation and regional impact.

While collaboration across universities, industry, and public sector institutions in the Midlands has historically been inconsistent, examples like **Health Innovation East Midlands demonstrate the transformative potential of targeted, cross-sector partnerships**. By acting as a regionally embedded healthcare innovation intermediary, HIEM has succeeded in translating applied research into scalable clinical solutions, accelerating technology diffusion across NHS systems, and generating substantial public value. Its ability to attract investment, streamline adoption processes, and bridge the "bench-to-bedside" gap showcases how integrated collaboration models can overcome systemic barriers in R&D ecosystems. This example highlights what is possible when research, implementation, and funding are strategically aligned at the regional level.

Health Innovation East Midlands (HIEM) – bridging innovation gap in Healthcare	
Objective. To improve healthcare delivery across East Midlands by increasing testing, adoption and scaling of diagnostic and treatment tools, HIEM is the innovation arm of the NHS of the East Midlands. **Implementation** A remarkable contribution is HIEM's support for QbTest technology for ADHD diagnosis, reducing diagnostic time and creating partnerships to fast-track innovative solutions from "bench to bedside." The company, QbTech, was also supported by researchers from the local NIHR infrastructure. It has also attracted significant investment to expand health-tech adoption. **Outcomes** The QbTest program saved the NHS £38.5 million, created 95,097 hours of additional capacity, and reduced diagnosis time by 153 days. Over 620,000 patients benefited from HIEM's initiatives in 2023-2024. Between 2013 when HIEM was established, and March 2024, the organisation created an estimated £205M value against funding of £51.7M. Innovations supported by HIEM during that period benefited around 1.4 million people in the East Midlands, and beyond the region within the UK and internationally who have been positively impacted by the wide spread of East Midlands innovation. More than 1,000 organisations have benefited from HIEM expertise and in excess of £100M of inward investment was generated between 2013 and 2024	52% of R&D funding received by London and the South while the Midlands captures around 10% ONS, 2021

Policy Interventions Needed

Several policy interventions and enablers can be considered to foster a more dynamic and integrated R&D ecosystem:

1. Increase Public Investment in R&D: To address regional disparities in funding, government efforts must prioritize allocating more R&D resources to the Midlands. Programs such as the Catapult Centres, designed to bridge the gap between businesses and academia, should receive targeted support in the region. Establishing more region-specific R&D grants and pilot schemes would further encourage local innovation, enabling Midlands-based enterprises to access financial resources that foster research and technological advancements. By prioritizing funds for emerging sectors—such as advanced manufacturing, green technology, and health tech—the Midlands can attract high-growth industries that are instrumental to long-term economic resilience.

2. Encourage Private Sector Investment: Financial incentives, such as tax breaks for R&D spending and venture capital schemes, could stimulate private sector innovation, particularly in sectors like digital services, fintech, and advanced manufacturing. Additionally, policies that promote foreign direct investment (FDI) post-Brexit should focus on positioning the Midlands as a key R&D hub. Collaborating with financial institutions to create regionally focused investment funds could also support start-ups and SMEs in their growth stages. In addition to FDI incentives, regulatory adjustments that simplify the process for companies investing in R&D, especially in low-carbon technologies, would attract diverse investment and drive sectoral growth.

3. Strengthen University-Industry Linkages: Midlands universities, while capable of high-quality research, need better connections with local businesses. Knowledge transfer partnerships and collaborative research agreements between universities and the private sector should be expanded to drive innovation and commercialization. Establishing dedicated R&D liaison offices within universities can help streamline collaboration, making it easier for businesses to identify academic expertise and access cutting-edge research. Expanding local innovation networks—such as business incubators and accelerators attached to universities—can foster knowledge-sharing and create a nurturing environment for spinouts and startups. Policies that incentivize academia to commercialize research outputs, combined with enhanced support for university-affiliated entrepreneurs, would ensure that scientific advancements translate more directly into economic value.

4. Upskill the Workforce: Addressing the region's skills gap is crucial. Investing in lifelong education and training, particularly in STEM fields, will ensure that the Midlands has the talent pool needed to support a growing R&D ecosystem. Programs that focus on digital skills and green technology expertise are especially vital, given the evolving demands of industries driving regional growth. Management training for SMEs can also enhance their capacity for innovation. Beyond STEM, fostering interdisciplinary skills, such as project management and data analytics, will enable a more adaptable workforce capable of navigating complex R&D environments. Encouraging partnerships between universities, vocational institutions, and local businesses to design industry-aligned curriculums can also help bridge the skill gap.

5. Support for SMEs: Given their central role in the region, SMEs should be targeted with tailored innovation support. Programs that help SMEs adopt new technologies, improve productivity practices, and engage with R&D activities are vital [63].

To reverse the region's productivity lag, the Midlands must establish itself as a centre for Innovation adaptation regionally. This will require significant shifts in both public and private investment, alongside policies that encourage collaboration between universities, businesses, and the government.

A key policy consideration is the role of devolution in shaping place-based innovation. The Midlands now has three Mayoral Combined Authorities (WMCA, EMCCA, and GLCCA), each establishing innovation boards as part of their economic strategies. Building capacity within these authorities to lead regional innovation agendas will be crucial, particularly as around £500 million of UKRI's budget is being directed to place-based programmes where effective triple-helix collaboration can be demonstrated. Established combined authorities are already securing significant allocations (£30–50 million each), while newer or non-devolved areas will need to strengthen innovation leadership to compete for future funding.

Without addressing the regional imbalance in R&D funding and innovation capacity, the Midlands risks falling further behind in the UK's productivity landscape. However, with targeted policy interventions, strategic investment, and a concerted focus on upskilling the workforce, the region has the potential to emerge as a major player in the UK's innovation economy.

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