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South Yorkshire Plan for Growth: Economic Analysis

A report by Metro Dynamics on behalf of South Yorkshire Mayoral Combined Authority

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Introduction

Metro Dynamics were commissioned by the South Yorkshire Mayoral Combined Authority (SYMCA) to support the development of principles of the Plan for Growth.

The objective of this work was not to produce a full evidence base, and this evidence paper is not a full evidence base.

Metro Dynamics were asked to review and synthesise existing work and carry out additional analysis where valuable to better understand barriers to and enablers of growth in South Yorkshire.

The Paper is organised into themes across growth determinants, setting out analysis produced to understand how to drive inclusive, sustainable economic growth in South Yorkshire.

The Paper uses a variety of sources that feed into the analysis. The paper primarily uses publicly available data produced by the ONS and other governmental departments but some private data platforms such as CoStar have been used. The paper also draws upon research and papers produced by different authorities such as SYMCA and universities.

South Yorkshire's performance has been benchmarked against national averages and comparator Mayoral Combined Authorities (MCAs) in the North such as Greater Manchester, Liverpool City Region and West Yorkshire.

The paper also reflects the findings from our benchmarking study with OCO Global into the strengths and weaknesses of South Yorkshire relative to national and international competitor locations.

This work does not include an in-depth study into the sectoral composition of South Yorkshire's economy. This work was led by the Yorkshire & Humber Policy Engagement & Research Network and examined South Yorkshire's sector make-up and particularly areas of strength and growth opportunities. A summary of this work, by University of Sheffield's Dan Olner, is in a separate Annex to the *South Yorkshire Plan for Growth*.

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Executive Summary

The barriers to growth in South Yorkshire are broad and complex, cutting across sectors and geographies. The region's economic performance has lagged comparable regions and productivity is a pan-sectoral issue. Poor transport connections limit the size of the labour market and levels of capital investment are low.

However, South Yorkshire also has great potential, particularly in research and science and technology, building on a strong base in local universities and the Advanced Manufacturing Research Centre.

Sectors that produce higher productivity tradable goods and services are the core engine of growth for the UK's services-dominated globalised economy.

Clusters, as concentrations of activity in a particular sector in a particular place, increase productivity and boost competitiveness. Firms benefit from this concentration and positive spillovers of useful knowledge between these firms are to their mutual benefit. Physical space and infrastructure are a key pillar of this growth model, providing premises for firms and expanding the size of the labour market. However, these firms need an innovation ecosystem that includes research institutes, the supportive networks, professional services, finance, and leadership that make innovation happen.

This thinking underpins the analysis of the barriers to, and enablers of, growth set out below.

This analysis found that:

- **Productivity is relatively low and this challenge is pan-sectoral:** GVA per capita for all sectors, bar education and agriculture, is below the national average and lags comparator Mayoral Combined Authorities (MCAs).

- **South Yorkshire has seen growth in tradable sectors, particularly in the Sheffield-Rotherham corridor:** Between 2015 and 2021, South Yorkshire's tradables jobs grew 3.4%.

- **However, growth in tradables was weaker than Greater Manchester and Liverpool City Region.**

- **The region lacks economic complexity and has low levels of capital investment:** There is an absence of specialisation particularly in financial and professional services jobs, as gross fixed capital formation per capita lags comparator regions and R&D spending is below the national average.

- **Housing is cheap compared to other core cities:** South Yorkshire's housing is more affordable than other city regions.

- **Transport connections are relatively poor:** Manchester has more than double the population within 45 minutes of its city centre compared to Sheffield due in part to better transport links.

- **There are significant spatial inequalities in incomes and healthy life expectancy:** Pockets of high household income (£69,000 and above) are concentrated in west Sheffield. However, the majority of households in the region have an income between

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£22,000 and £37,000. Female healthy life expectancy at birth is eight years longer in Sheffield than Doncaster.

- **South Yorkshire's innovation ecosystem is strong in research and science and technology with key anchor assets in local universities and the Advanced Manufacturing Research Centre.**

- **Action is needed to increase the number and size of spinoffs, attract more equity investment, and expand the supply of high quality office space.**

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Overview of growth and sectors

This section examines South Yorkshire's productivity, the change over time, and how the region performs against comparators. The section also analyses South Yorkshire's sectoral composition, exploring the most productive industries and what specialisms exist in each local authority. This section finds that productivity is low in South Yorkshire, particularly in Sheffield when comparing to core city comparators. This is a pan-sectoral productivity issue. South Yorkshire also has core specialisms in manufacturing which is seen in each local authority.

Productivity

Figure 1 – Productivity is equal, but equally low.
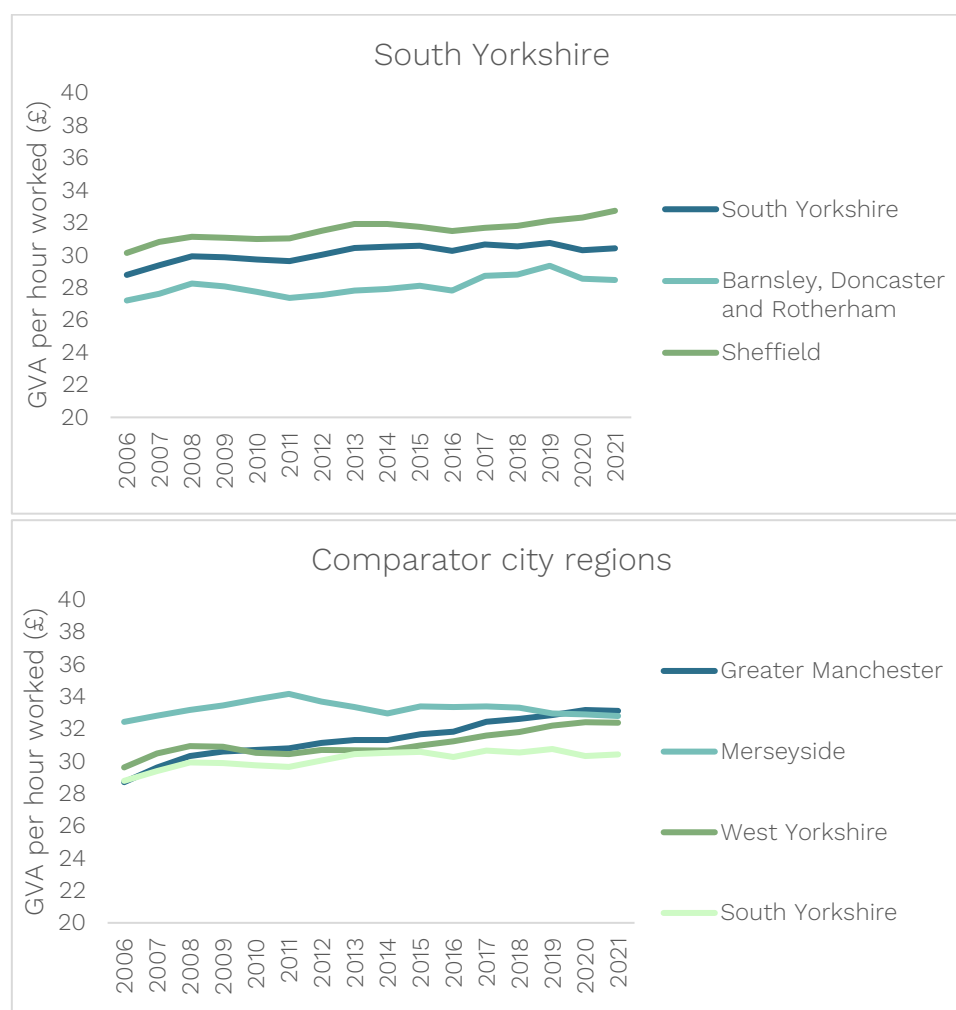
Source: ONS, Subregional productivity, June 2023 release.[1]

South Yorkshire's productivity is poor when compared to other city regions. Of the four MCAs, South Yorkshire has the lowest Gross Value Added (GVA) per hour worked at £30.42 in 2021, while Greater Manchester, West Yorkshire and Liverpool City Region had GVA per hour

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[1] Productivity has been adjusted for inflation and smoothed using a three-year average.

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worked scores of £33.10, £32.86, and £32.54 respectively. Since 2006, productivity in South Yorkshire has had stagnant growth, as GVA per hour rose by just £1.64 across the period, significantly less than the comparators of Greater Manchester and West Yorkshire, which saw productivity rise by £4.40 and £2.39 respectively. The gap in productivity between Barnsley, Doncaster and Rotherham with Sheffield is lower than the gap between comparator districts and their core cities, besides in Liverpool City Region.

Figure 2 has two graphs, the first demonstrates how Sheffield's productivity compares to other comparator core cities, while the second graph compares how Barnsley, Doncaster and Rotherham relate to other districts in comparator MCAs. Of the four core cities, Sheffield had the lowest productivity until 2021, where it overtook Liverpool. Sheffield currently lags both Leeds and Manchester in GVA per hour worked by 7% and 10% respectively.

*Figure 2 – Sheffield is a particular outlier compared to other core cities.*
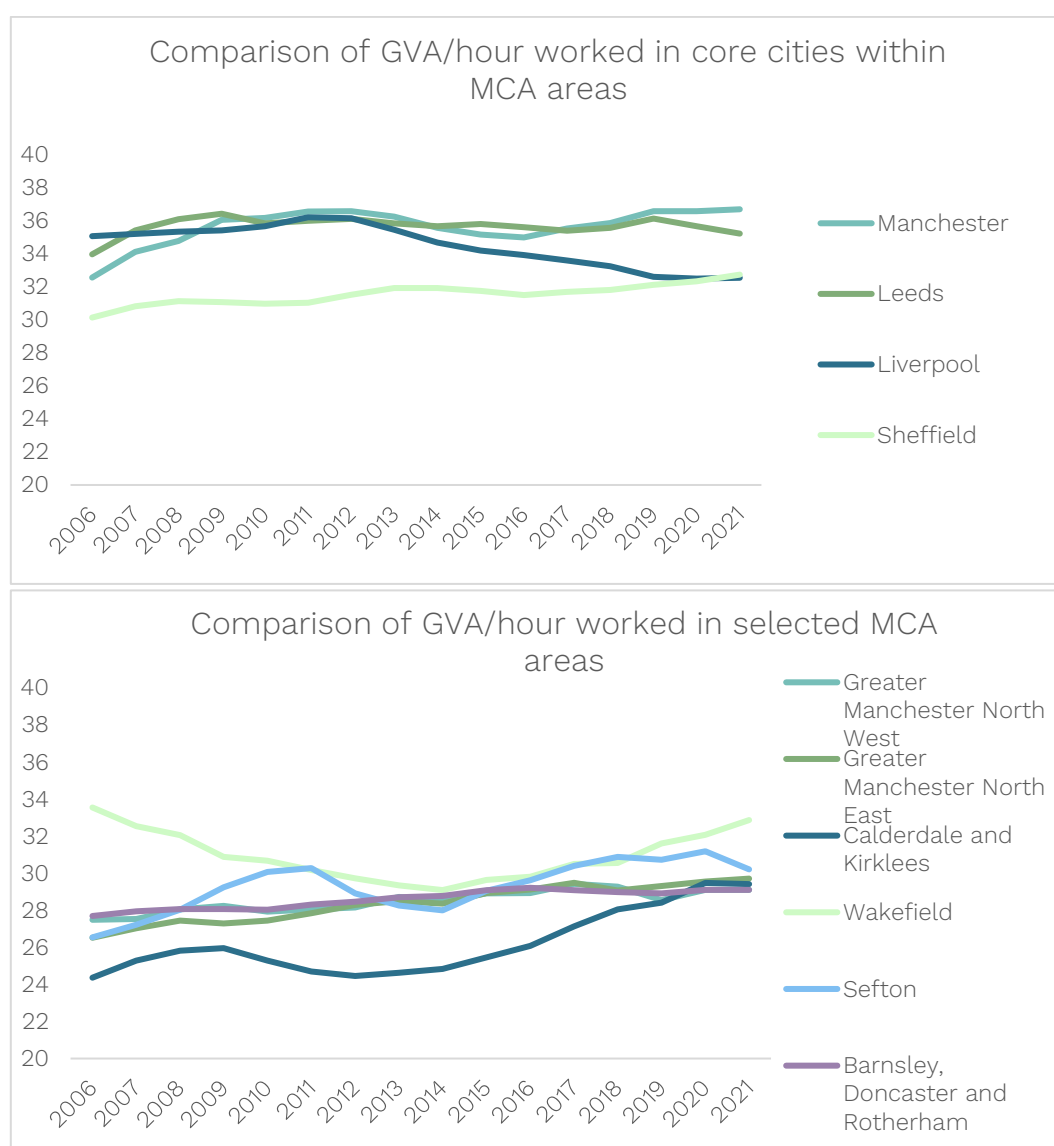
Source: ONS, Subregional Productivity, June 2023 release.

There has been less of a gap in productivity between Barnsley, Doncaster and Rotherham, and comparator districts in other MCAs, though growth has been tepid.

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Productivity is low across all sectors relative to both the Great Britain average and city region comparators. Both Figure 3 and Table 1 explore the GVA per job for each broad industry in South Yorkshire, relative to the Great Britain average and weighted average of Greater Manchester, West Yorkshire and Liverpool City Region, the size of bubble represents the total size of each industry in terms of employment. Exact figures and calculations can be found in the table below the bubble chart.

Figure 3 – Productivity is low across all sectors.
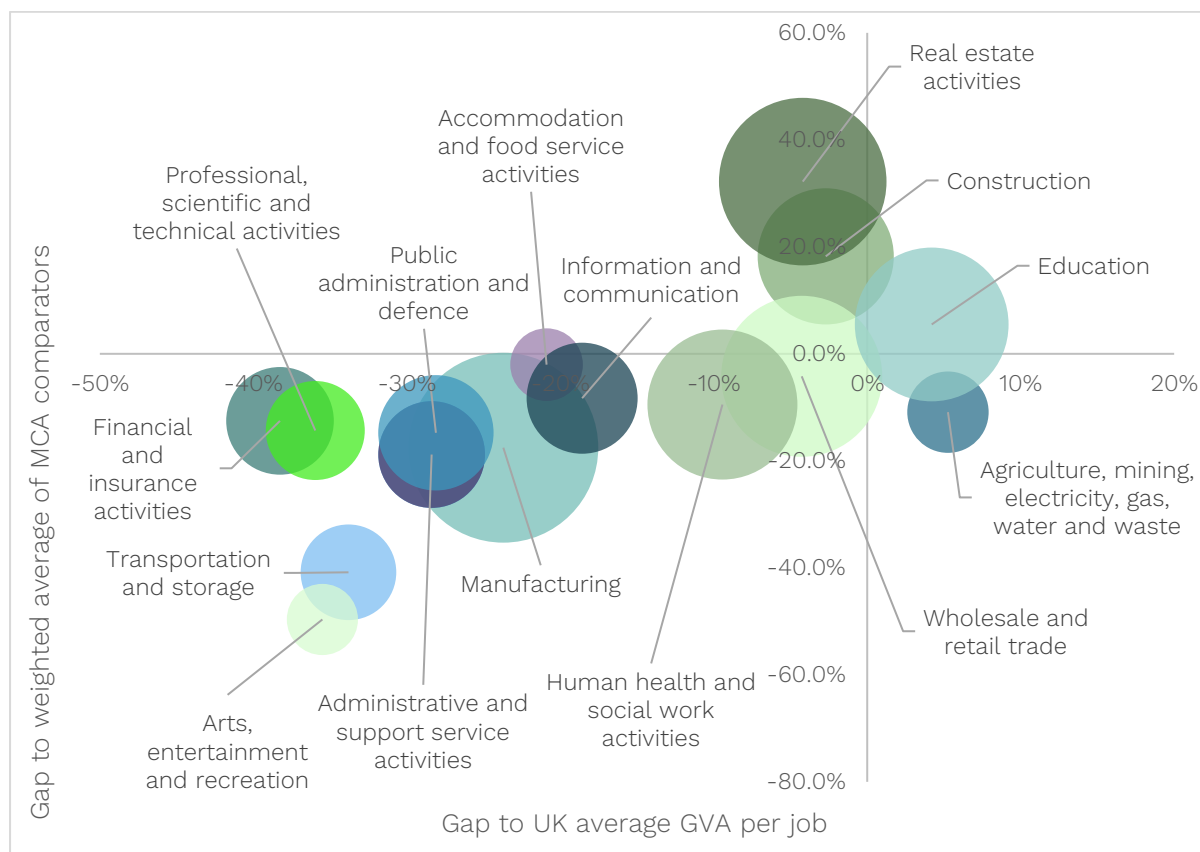
Source: Regional gross value added (balanced) by industry: all ITL regions. ONS, Business Register and Employment Survey.

Table 1 – South Yorkshire lags comparators significantly in some industries.

Broad Sector Group	SYMCA GVA (£m) (2021)	SYMCA GVA per job (2021)	GB GVA per job (2021)	SYMCA GVA per job growth (2016 - 2021)	SYMCA jobs (2021)	% Gap to GB	Weighted GM/LCR/WY Average	% Gap
Manufacturing	4,109	£69,059	£90,520	13.6%	59,500	-24%	£81,174	-17.5%
Real estate activities	3,199	£457,000	£477,039	-4.9%	7,000	-4%	£309,876	32.2%
Wholesale and retail trade; repair of motor vehicles	2,953	£37,380	£39,045	-3.2%	79,000	-4%	£38,950	-4.2%
Education	2,694	£42,762	£41,037	-8.5%	63,000	4%	£40,414	5.5%
Human health and social work activities	2,564	£27,570	£30,442	-20.6%	93,000	-9%	£30,184	-9.5%

Construction	2,113	£78,259	£80,434	7.6%	27,000	-3%	£64,000	18.2%
Public administration and defence	1,516	£46,646	£64,878	-18.5%	32,500	-28%	£53,530	-14.8%
Information and communication	1,405	£78,056	£95,862	68.3%	18,000	-19%	£84,531	-8.3%
Financial and insurance activities	1,320	£97,778	£158,371	4.4%	13,500	-38%	£110,026	-12.5%
Administrative and support service activities	1,297	£26,469	£36,958	-8.2%	49,000	-28%	£31,452	-18.8%
Professional, scientific and technical activities	1,117	£34,906	£54,508	-4.2%	32,000	-36%	£39,909	-14.3%
Transportation and storage	1,042	£26,718	£40,359	-32.0%	39,000	-34%	£37,629	-40.8%
Agriculture, mining, electricity, gas, water and waste	754	£132,281	£125,668	37.3%	5,700	5%	£146,704	-10.9%
Accommodation and food service activities	601	£16,243	£20,533	-28.0%	37,000	-21%	£16,572	-2.0%
Arts, entertainment and recreation	577	£26,227	£40,661	-24.0%	22,000	-35%	£39,250	-49.7%

Source: Regional gross value added (balanced) by industry: all ITL regions. ONS, Business Register and Employment Survey.

GVA per job in South Yorkshire is strong for Education and Agriculture which are 4% and 5% more productive than the national average respectively. Additionally, Education, Construction and Real Estate Activities in South Yorkshire are more productive than the weighted average of comparator MCAs, respectively 6%, 18% and 32% more productive.

However, productivity is weak across most sectors. GVA per job in South Yorkshire is below the national average in all broad sector areas besides Education and Agriculture. In particular, the Financial and Insurance, and Professional, Scientific and Technical activities sectors are 38% and 36% less productive respectively. South Yorkshire significantly lags comparator MCAs in Transportation and Storage, and Arts, Entertainment, and Recreation with a gap of 41% and 50% respectively. This indicates that the productivity challenge in South Yorkshire is a pan-sectoral one, driven by fundamentals which cut across the economy, rather than sector-specific barriers or constraints.
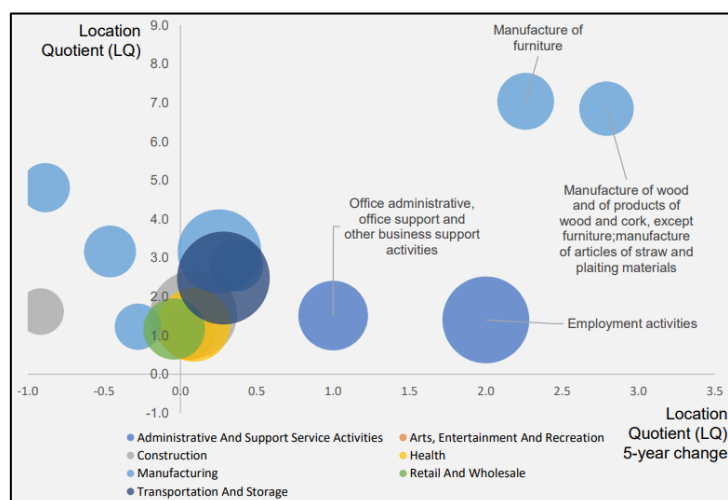
Sectors

This section has been informed by previous published analysis by Metro Dynamics and OCO Global.[2] The previous work completed a Location Quotient (LQ) analysis of the top 15 SIC-2 sectors in each South Yorkshire district. LQs show the relative specialism of a place by comparing the share of jobs in a certain industry with a national comparator. The y-axis on

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[2] OCO Global and Metro Dynamics, South Yorkshire Mayoral Combined Authority – Benchmarking Report, 2022.

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these graphs demonstrates the LQ score of that sector, while the x-axis represents the change in LQ (specialism) across the five-years leading to 2021.

Figure 4 – Barnsley has unique manufacturing strengths and a large logistics sector.

Source: OCO Global and Metro Dynamics, SYMCA – Benchmarking Report, 2022.

Barnsley shares strengths in the manufacturing sector with other parts of South Yorkshire as the top six most specialised subsectors are within the industry. In particular, Barnsley specialises in the manufacture of furniture and wood products at seven times more than the rest of Great Britain; this specialisation has also increased. Barnsley is also twice as specialised in logistics activities than the Great Britain average, home to 4,000 jobs in the district.

*Figure 5 – Doncaster has manufacturing strengths, but a more balanced economy.*
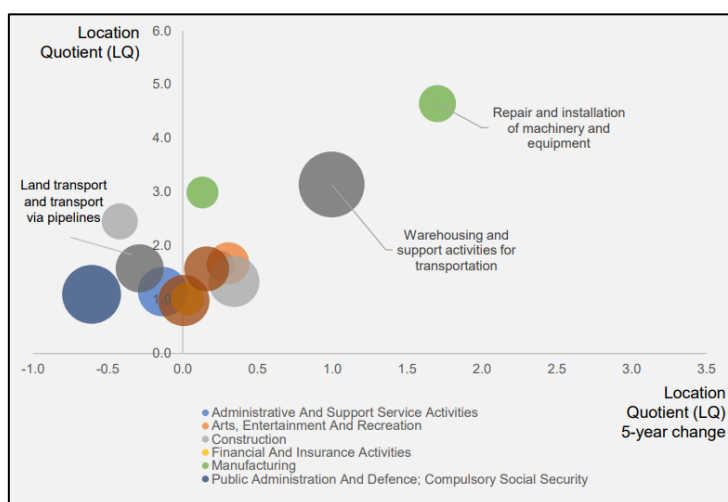
Source: OCO Global and Metro Dynamics, SYMCA – Benchmarking Report, 2022.

The most specialised sector in Doncaster was the repair and installation of machinery at five times more specialised than Great Britain. This is followed by warehousing and support activities for transportation, which employs 7,500. The legacy rail sector is still a strength in Doncaster, but specialism is declining over time.
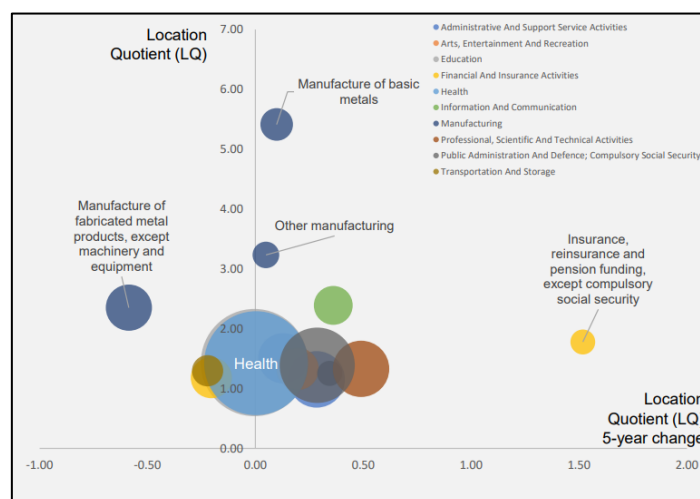
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Figure 6 – Manufacturing strengths in Rotherham driven by the Advanced Manufacturing Research Centre (AMRC).
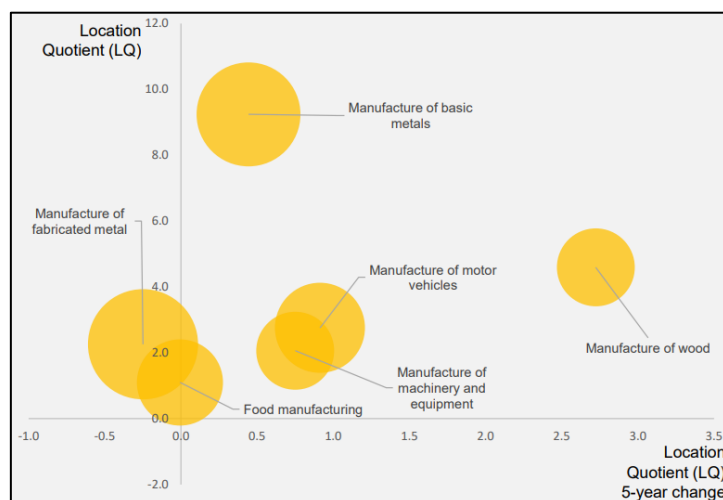
Source: OCO Global and Metro Dynamics, SYMCA – Benchmarking Report, 2022.

The AMRC is a major physical asset for the region based in the Sheffield-Rotherham corridor and drives the manufacturing strength in Rotherham. The LQ analysis shows that Rotherham's industrial base is both specialised and has growing sub-sectors. In particular, the manufacture of basic metals is a standout specialism at over nine times more specialised than the Great Britain average.

Figure 7 – Opportunities in health in Sheffield.

Source: OCO Global and Metro Dynamics, SYMCA – Benchmarking Report, 2022.

The health sector has specialism in Sheffield and is a large employer with strong assets, but specialism is growing at a slower pace. Like previous districts mentioned, Sheffield too has a strong specialism in manufacturing, with the manufacture of basic metals coming out as the most specialised sub-sector in Sheffield.

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In-depth look at tradable sectors

Tradable sectors, defined as those that produce goods and services that can be traded outside of the region, are the key to increasing productivity and generating growth. This is because growth and prices are not limited by conditions in the local market and businesses are more likely to innovate as they are exposed to more competition. This section looks at the geography of jobs in tradable sectors in South Yorkshire and how these have evolved over the last several years. The analysis shows growth in the corridor between Sheffield and Rotherham but some concerning declines in urban centres. Sheffield is the only local authority in the region which has seen the share of all jobs in tradable sectors grow between 2015 and 2021.

The sectors included in the analysis of tradable jobs are: Manufacturing; Professional, Scientific and Technical; Finance and Insurance; Information and Communications (ICT); Administration and Support Services and; Arts, Entertainment and Recreation.

Figure 8 – The geography of tradable jobs in South Yorkshire.
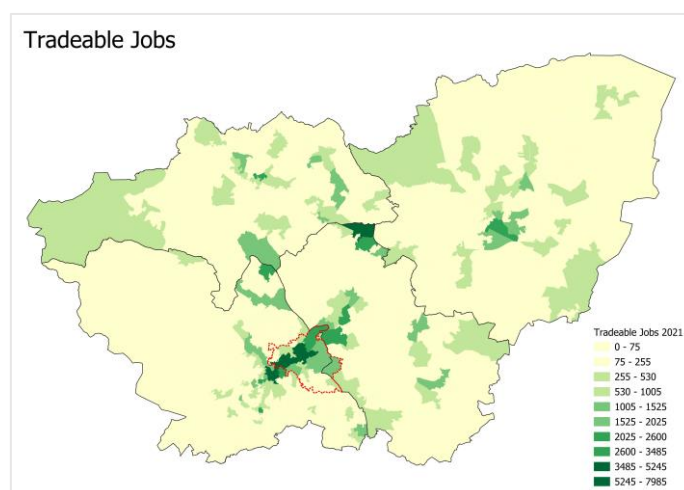
Source: ONS, Business Register and Employment Survey, 2023.

Overall, as of 2021, 31.9% of jobs in South Yorkshire were in tradable sectors, slightly lower than the national average of over 35.6%. This grew by 3.4% between 2015 and 2021, also below the national increase of 5.9% in the same period.

Sheffield has nearly half (49.2%) of the tradable jobs in South Yorkshire. This represents a slight increase on the share of tradable jobs that was in Sheffield in 2015 (47.4%).

The share of jobs that are tradable in South Yorkshire lags Greater Manchester, West Yorkshire and the national average (Table 2), however 3.1% more jobs are tradable in South Yorkshire than Liverpool City Region. The growth in tradable jobs is also at just 3.4%, which is lower than most comparators, only ahead of West Yorkshire. South Yorkshire has a lower growth rate of tradable jobs than all jobs, meaning that the total share of jobs that are tradable has declined since 2015.

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Table 2 – South Yorkshire has a smaller share of tradable jobs than the national average.

	Tradable Jobs 2021	Total Jobs 2021	% of jobs which are tradable	Change in tradable jobs 2015 - 2021	% change in tradable jobs 2015 - 2021	% change in jobs 2015 - 2021
South Yorkshire	184,000	577,000	31.9%	6,000	3.4%	5.0%
Greater Manchester	513,000	1,391,000	36.9%	69,000	15.5%	13.6%
Liverpool City Region	194,000	673,000	28.8%	14,500	8.1%	11.3%
West Yorkshire	403,000	1,084,500	37.2%	3,000	0.8%	5.5%
Great Britain	10,812,000	30,381,000	35.6%	607,000	5.9%	5.7%

Source: ONS, Business Register and Employment Survey, 2023.

The evolution of tradable jobs across the local authorities in South Yorkshire has been uneven over the last number of years with growth above the national average in Barnsley and Sheffield but a decline in jobs in tradable sectors in Rotherham (Table 3). Each local authority has a lower share of jobs which are tradable than the national average. Sheffield is also the only local authority in region which has seen a growing share of total jobs in tradable sectors, with growth in tradable sectors exceeding the overall percentage change in the number of jobs.

Table 3 – Each district has a lower share of tradable jobs than the national average.

	Tradable Jobs 2021	Total Jobs 2021	% of jobs which are tradable	Change in tradable jobs 2015 - 2021	% change in tradable jobs 2015 - 2021	% change in total jobs 2015 - 2021
Barnsley	26,150	85,000	30.8%	2,150	9.0%	11.8%
Doncaster	34,250	128,000	26.8%	1,250	3.8%	5.8%
Rotherham	33,500	100,000	33.5%	-2,750	-7.6%	-1.0%
Sheffield	91,000	264,000	34.5%	7,000	8.3%	5.2%
Great Britain	10,812,000	30,381,000	35.6%	607,000	5.9%	5.7%

Source: ONS, Business Register and Employment Survey, 2023.

Sheffield only very slightly lags the Great Britain average in the share of jobs that are tradable by 1.1% of the total share (Table 4). It is behind Manchester and Leeds but has a greater share than Liverpool. While Sheffield is closing the gap to the Great Britain average in the share of tradable jobs, the rate at which the share is growing (represented by the difference between the grow is significantly slower than Manchester and Liverpool. Sheffield also sees the slowest growth in total jobs.

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Table 4 – Manchester and Leeds have significantly higher shares of tradable jobs.

	Tradable Jobs 2021	Total Jobs 2021	% of jobs which are tradable	Change in tradable jobs 2015 - 2021	% change in tradable jobs 2015 - 2021	% change in jobs 2015 - 2021
Sheffield	91,000	264,000	34.5%	7,000	8.3%	5.2%
Liverpool	77,500	269,500	28.8%	15,500	25.0%	16.4%
Manchester	163,500	416,000	39.3%	30,500	22.9%	18.9%
Leeds	197,000	471,000	41.8%	7,500	4.0%	8.9%
Great Britain	10,812,000	30,381,000	35.6%	607,000	5.9%	5.7%

Source: ONS, Business Register and Employment Survey, 2023.

Figure 9 maps the geographic disparities in the absolute change of tradable jobs between 2015 and 2021.

Figure 9 – Tradable jobs are growing in the Sheffield/Rotherham corridor.
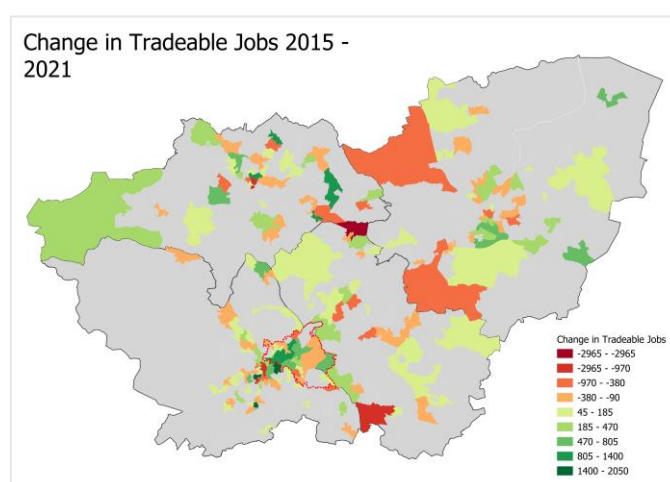
Source: ONS, Business Register and Employment Survey, 2023.

Between 2015 and 2021, tradable jobs in South Yorkshire increased by 6,080. However, this change was uneven across South Yorkshire. Growth was strong overall in Sheffield and Barnsley, while Doncaster experienced moderate growth in the period, and Rotherham saw a decline.

The Sheffield-Rotherham corridor experienced strong growth in tradable jobs, particularly in the Advanced Manufacturing Innovation District, highlighted by the red border on the map. Within local authorities there appears to have been a contraction in the number of tradable jobs in parts of the urban centres, particularly in Sheffield city centre and Barnsley.

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Figure 10 – Decline in Rotherham largely driven by a fall in employment in admin and support services.

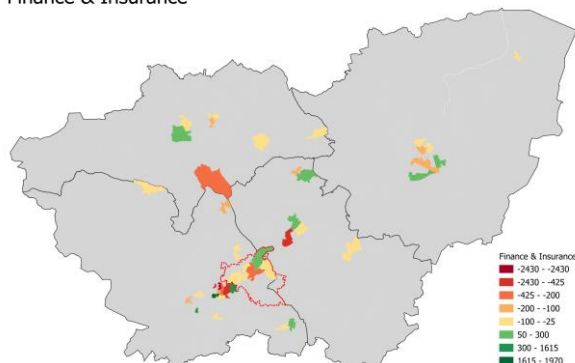Source: ONS, Business Register and Support Services, 2023.

Within broad industrial sectors, the change in tradable jobs in South Yorkshire has been inconsistent. Barnsley saw a rise in admin and support services and little change elsewhere while Doncaster saw rising employment in manufacturing, ICT and professional activities, while admin and support services saw a decline in employment. The decline in Rotherham was largely due to a fall in admin and support services of 4,000 jobs, despite rising employment in manufacturing and ICT. Sheffield experienced a fall in manufacturing employment but saw significant increases in information and communication and admin and support services. These changes in the number of jobs for each tradable sector has been mapped below.

Figure 11 maps out the change in the number of jobs in each tradable sector. Employment in finance and insurance fell in South Yorkshire by 1,500 across the period, with some of the largest declines felt in Sheffield city centre. Roles in Arts, Entertainment and Recreation saw the largest decline since 2015 by 1,840 jobs with the largest decline in Doncaster city centre. Admin and support services grew by 975 jobs, but this is largely driven by growth in Sheffield and Barnsley, whereas Doncaster and Rotherham saw declining employment in this sector.
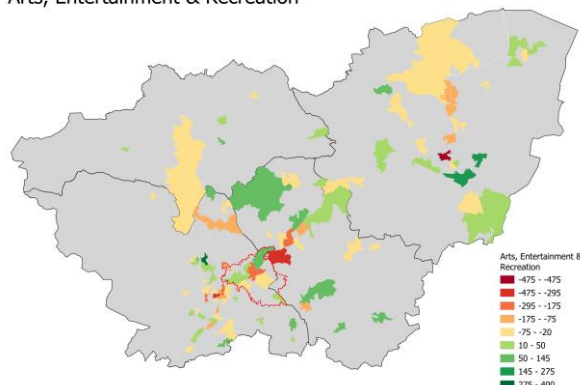
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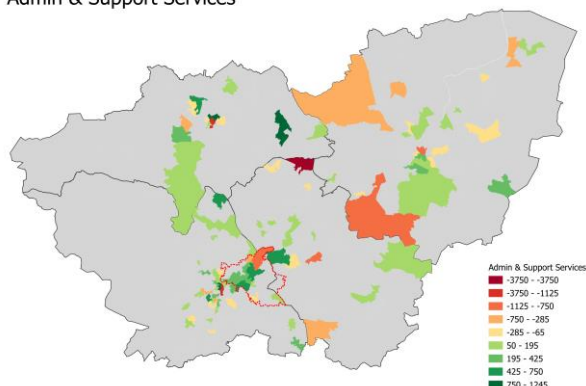*Figure 11 – Information and Communication saw the largest employment growth of any tradable sector in South Yorkshire.*
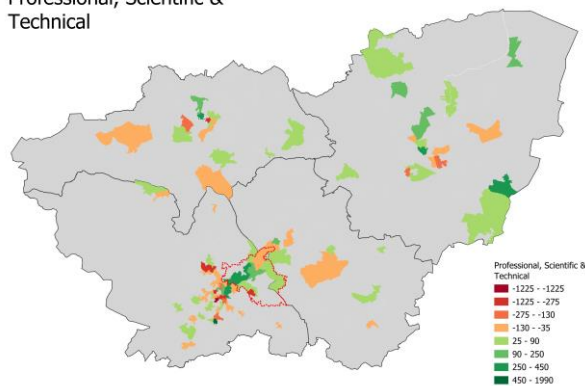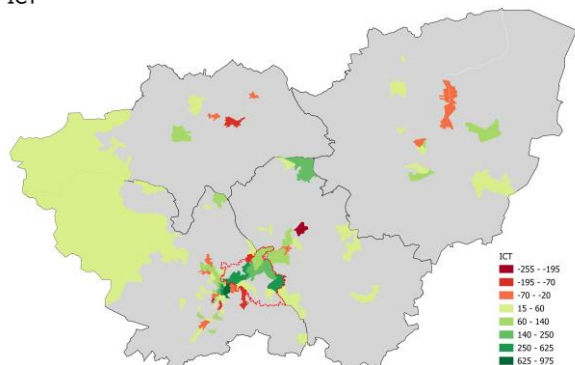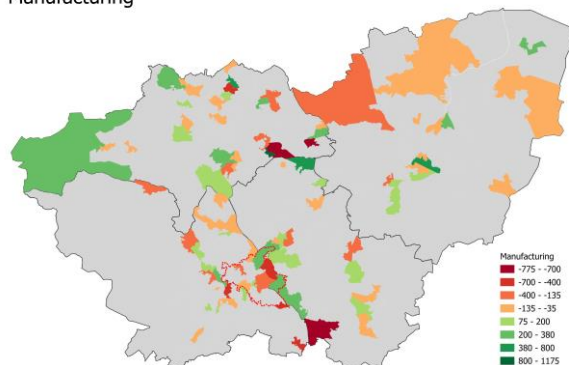

Source: ONS, Business Register and Support Services, 2023.

The region also saw a net rise in professional, scientific, and technical jobs in the period by 1,385 but this was unevenly distributed. Information and Communication experienced the largest growth of any tradable sector, with an increase of 6,390 jobs since 2015, which was felt in all four areas. The Advanced Manufacturing Innovation District is a notable highlight which experienced strong growth in this sector. Manufacturing saw a small total net rise of 670 jobs but sees significant disparities across South Yorkshire as some parts saw significant rises while others had large declines in employment.

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South Yorkshire Innovation

This section sets out an overview of the innovation ecosystem in South Yorkshire. Our approach reviews whether the necessary conditions exist for a successful innovation ecosystem to drive economic growth and productivity improvements. This is not a complete review and is intended to provide a framework to think about the barriers to innovation.

An Innovation Model

Growing innovation in a place requires the right conditions for new ideas to germinate and grow and for interactions which expose existing firms to new ideas and opportunities take place. Taking an ecosystem approach is a way to understand whether these conditions exist.

This is consistent with the wider analytical approach which has looked to identify the main constraints on growth, with an emphasis on inclusive growth across geography and sectors.

Metro Dynamics uses a model developed as part of the Cambridgeshire and Peterborough Independent Economic Review (CPIER).[3] The model sets out the necessary ingredients for a growing innovation cluster, with the flexibility for this to be unique to each place.

The five pillars and beams of the model are:

Knowledge Engine: large organisation(s) which drives innovation, leads research and creates a hub for people in the ecosystem.
**Finance and Intellectual Property** (IP): the capital to develop ideas and the support in place to protect newly developed ideas.
Physical Space: space for businesses to work and grow, as well as spaces that facilitate interactions.
Capability Development Programmes: programmes to support founders and businesses to develop and scale up.
Networks and Linkages: connections between people and organisations in the ecosystem.

Figure 12 – The CPIER Innovation Model.

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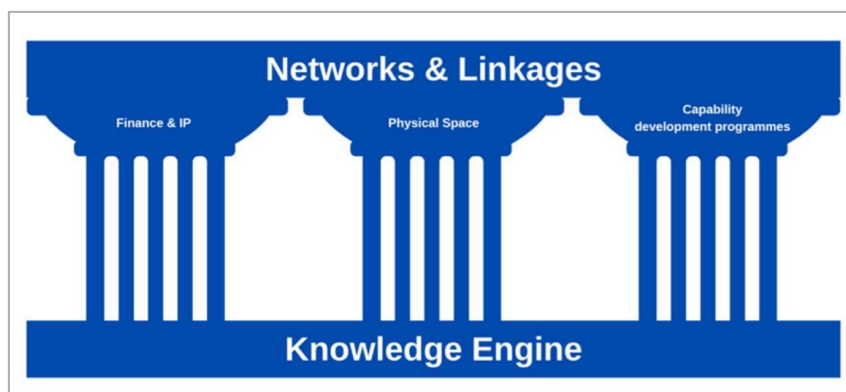
[3] Cambridgeshire and Peterborough Independent Economic Review, The Cambridgeshire and Peterborough Independent Economic Commission, 2018

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Each element is a necessary condition but are not individually sufficient: **a successful innovation ecosystem requires the presence of all five**.

The Knowledge Engine.

Knowledge engines are anchors for the ecosystem that drive development and innovation, the role is usually played by a large, leading organisation, for example a public institution, a business, or a university.

The key requirement for an organisation to be a Knowledge Engine for a place is for it to be anchored in the area, embedded into local heritage, talent pools, businesses and capitalising on local activities that will provide the basis for further innovation.

South Yorkshire has several large research assets which could fulfil the Knowledge Engine role, with two universities, University of Sheffield and Sheffield Hallam University, plus national technology and innovation centres such as the Advanced Manufacturing Research Centre (AMRC) and the Nuclear Advanced Manufacturing Research Centre (NAMRC).

The region also has several businesses who have received large Innovate UK grants including McLaren (ASCEND), Mobile Power Ltd, Magtec, Libertine FPE, Maher Ltd and Rinri Therapeutics.[4]

Innovate UK Grants

Organisations in South Yorkshire have a strong record of winning Innovate UK funding, as the table in Table 5 shows. Over this period organisations in South Yorkshire received £206 per head of population; the next highest was Liverpool City Region, at £55. Looking at research council funding, South Yorkshire did not show the same comparative strength in 2019/20 or 2020/21, receiving less per capita than Greater Manchester and Liverpool City Region.

Table 5 – Innovate UK & UKRI Research Council Funding

|	IUK funding (18/19 – 22/23)	IUK per capita (18/19 – 22/23)	Research Council spend per capita (19/20)	Research Council spend per capita (20/21)
South Yorkshire	£283,422,102	£206	£51	£52
Greater Manchester	£120,942,425	£42	£60	£56
West Yorkshire	£117,585,191	£50	£41	£49
Liverpool City Region	£85,984,209	£55	£60	£61

Source: Innovate UK Funded Projects, 2023; Geographical Distribution of UKRI Spend, UKRI.

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[4] Innovate UK grant Data. In addition, Figure 26 shows the geography of Innovate UK awards in South Yorkshire.

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The graph in Figure 13 shows the size of the funding to the catapults which, since 2011/12 have received over £220m. Money awarded to catapults accounts for just over 40% of the total IUK funding awarded to South Yorkshire organisations in the period covered by the data. However, even without the funding to catapults, South Yorkshire performs well relative to comparators, receiving £105 per capita between 2018/19 and 2022/23.

Figure 13 – IUK funding to South Yorkshire by recipient type.
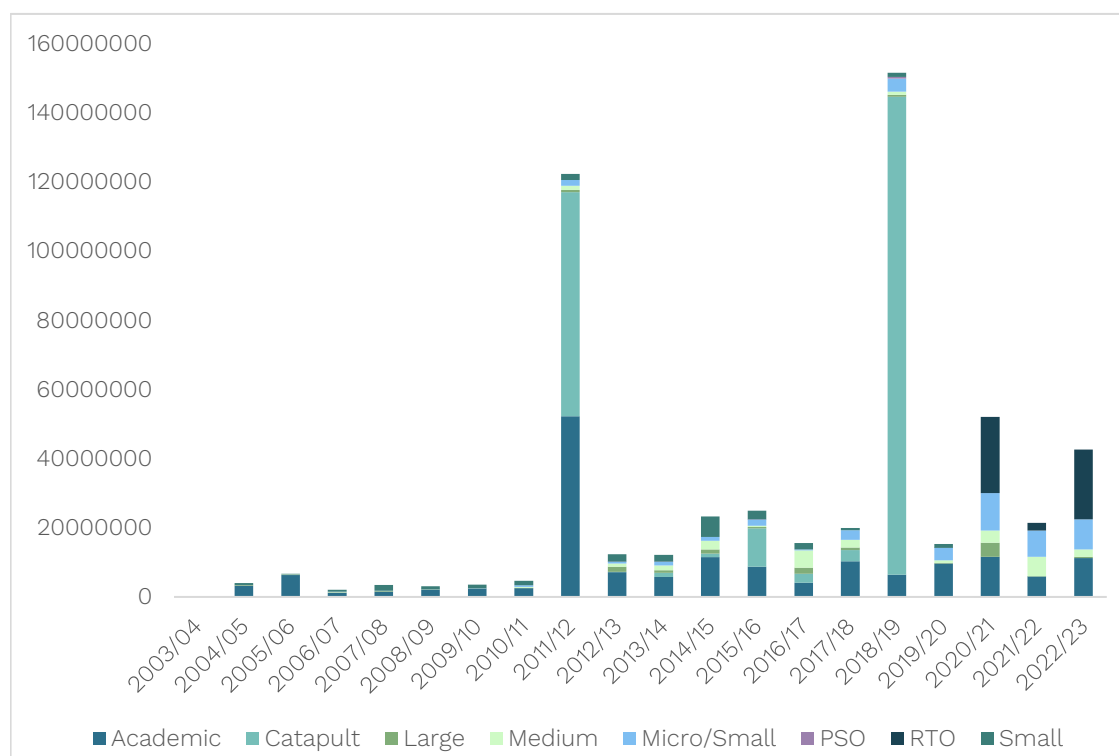
Source: Innovate UK Funded Projects, 2023.

University Subject Strengths

The tables below show the percentage of research submitted to the University of Sheffield and Sheffield Hallam University which received a given star rating for the 7 highest rated subject areas. According the 2021 Research Excellence Framework University of Sheffield's highest rated research strengths are in scientific and technical domains. Looking at scores for research impact in particular, several STEM areas receive high scores including Engineering (in both universities), Physics and Clinical medicine in the University of Sheffield and Biological Sciences and Computer Science in Sheffield Hallam University.

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Table 6 – University Strengths.

Overall Score: University of Sheffield

Unit of assessment name	4*	3*	2*	1*
Physics	65	35	0	0
Architecture, Built Environment and Planning	64	31	4	1
Biological Sciences	61	37	2	0
Computer Science and Informatics	60	39	1	0
Engineering	57	39	4	0
Education	54	32	12	2
Allied Health Professions, Dentistry, Nursing and Pharmacy	53	43	4	0

Overall Score: Sheffield Hallam

Unit of assessment name	4*	3*	2*	1*
Art and Design: History, Practice and Theory	46	44	9	1
English Language and Literature	42	35	23	0
Communication, Cultural and Media Studies, Library and Information Management	35	44	18	3
Sport and Exercise Sciences, Leisure and Tourism	31	57	12	0
Architecture, Built Environment and Planning	29	57	11	3
Education	26	53	18	3
Allied Health Professions, Dentistry, Nursing and Pharmacy	21	35	38	4

Impact Score: University of Sheffield

Unit of assessment name	4*	3*	2*	1*
Education	100	0	0	0
Mathematical Sciences	87.5	12.5	0	0
Public Health, Health Services and Primary Care	83.3	16.7	0	0
Architecture, Built Environment and Planning	83.3	16.7	0	0
Physics	83.3	16.7	0	0
Clinical Medicine	81.3	18.7	0	0
Engineering	77.3	18.2	4.5	0

Impact Score: Sheffield Hallam

Unit of assessment name	4*	3*	2*	1*
Allied Health Professions, Dentistry, Nursing and Pharmacy	66.7	0	33.3	0
Psychology, Psychiatry and Neuroscience	50	50	0	0
Biological Sciences	0	50	50	0
Computer Science and Informatics	0	66.7	33.3	0
Engineering	25	37.5	37.5	0
Architecture, Built Environment and Planning	62.5	37.5	0	0
Business and Management Studies	33.3	33.4	16.6	16.7

Source: Research Excellence Framework 2021. Numbers are the % of submitted research given rating, with 4* signalling world-leading.

Commercialisation of Research

Beauhurst's 2023 Spotlight on Spinouts Report found that University of Sheffield is 14th in the UK for the number of spin offs generated since 2011, with 41 generated.

Data from the Higher Education Statistics Agency provides another perspective of the commercialisation activities of the Universities in Sheffield compared to those in comparator cities and the national average. According to HESA's estimated turnover and external investment into spin-off data, the average per active spin off in the most recent year available (2021/22), we see that spin-offs from South Yorkshire perform well versus comparators but are far below the national average.

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HESA data also shows that Sheffield does comparatively poorly on licencing (granting businesses permission to use IP held by the university), with less than half the number of licenses per 100 students as nationally.

Table 7 – University Research Commercialisation.

	Licenses per 1000 students	Active spin-offs per 1000 students	Average spin-off turnover	Average external investment in spin-offs
Sheffield	44.47	0.67	£555,171	£360,000
Manchester	183.62	0.75	£263,789	£420,967
Leeds	23.82	0.46	£1,699,640	£57,940
Liverpool	9.99	0.37	£280,043	£103,652
England	110.02	0.72	£6,168,421	£2,834,912

Source: Higher Education Statistics Agency.

Finance and Intellectual Property

Developing new ideas generated by universities and individuals requires access to capital for individuals and for businesses. Without funding and support new ideas will not be developed into commercial opportunities that can drive growth and create opportunity in an area's economy. A successful innovation ecosystem requires a range of sources of capital to support different types of businesses at different stages of their journey, it is also important that access to capital for established businesses seeking to innovate and improve productivity is prioritised, along with capital for new start-ups and spin-outs.

Also important is the support that businesses need to protect their intellectual property. For spin-outs in particular the question of IP ownership and equity shares is an active area of debate which has been highlighted by the government. Research by Beauhurst found that the University of Sheffield tends to take a 15% to 20% equity stake in spin-offs which is in line with good practise nationally.[5]

British Business Bank regional data shows Yorkshire and the Humber receiving a low number of equity deals and volume of funding, with a lower average deal size.[6] While 7% of UK SMEs are in Yorkshire and the Humber, in the 2020-21 financial year just 3% of equity deals went to

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[5] Spotlight on Spinouts, 2023
[6] Nations and Regions Tracker: Small Business Finance Markets 2022. British Business Bank.

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business in South Yorkshire, and 2% of Enterprise Investment Scheme (EIS)[7] funds and 3% of Seed Enterprise Investment Scheme (SEIS)[8] funds were raised in the region.

British Business Bank reports also find that over 40% of businesses in Yorkshire who have received investment are more than two hours away from the office of their investor.[9] For the UK (excluding London) this is 18%. Lack of proximity to investors can affect business ability to raise investment as business leaders with less exposure are less aware of investor requirements and expectations.

Physical Space

Businesses and entrepreneurs need space to work and grow and spaces that bring about clustering of businesses and entrepreneurs as the melding together of different sectors and disciplines is an important part of accelerating innovation.

As shown in Figure 14, South Yorkshire has less than 75% of the office space per capita that Greater Manchester has and less than 80% of West Yorkshire's per capita space. Notably, of the space that is available in South Yorkshire, a lower share is high quality space (according to CoStar) at just 13% of the total stock, compared to 26% in Greater Manchester.

Figure 14 – South Yorkshire has the smallest share of Grade A Office space.
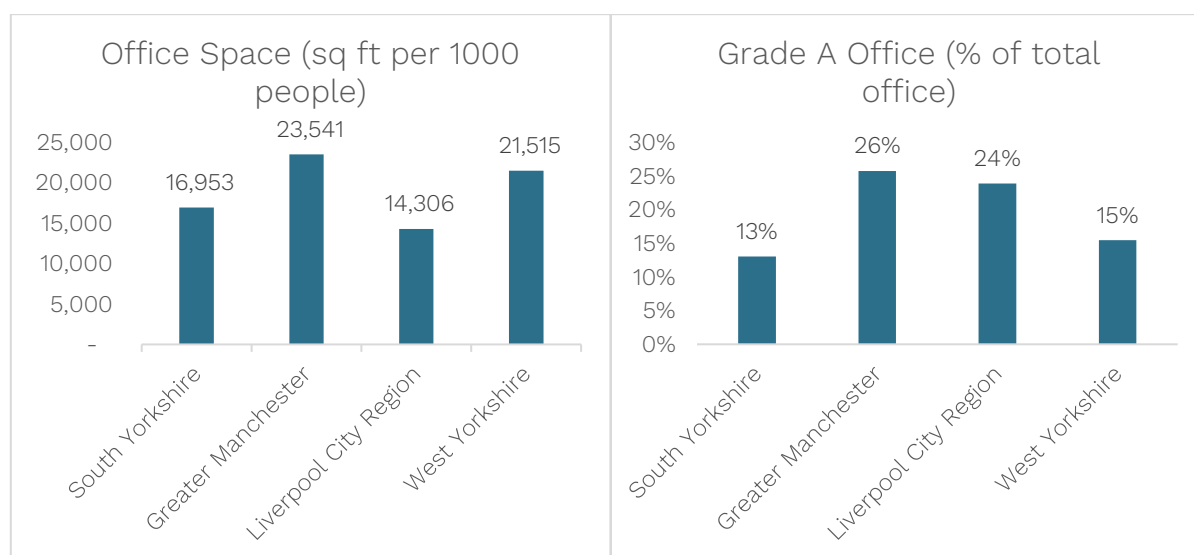
Source: CoStar. (Grade A Office space is the equivalent of a property rating of 4/5 stars on CoStar).

Figure 15 shows that of the 4 MCAs looked at, it has the largest amount of industrial space per capita (and second highest light industrial) and has had the largest amount of industrial space constructed in the last several years.

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[7] A government initiative to encourage investment into small companies, offering a range of tax reliefs to investors for shares in qualifying firms.

[8] A government initiative to encourage investment into small, early stage companies, offering a range of tax reliefs to investors for shares in qualifying firms.

[9] Regions and Nations Tracker: Small Business Finance Markets 2021

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Figure 15 – Industrial Space per capita exceeds comparator MCAs.
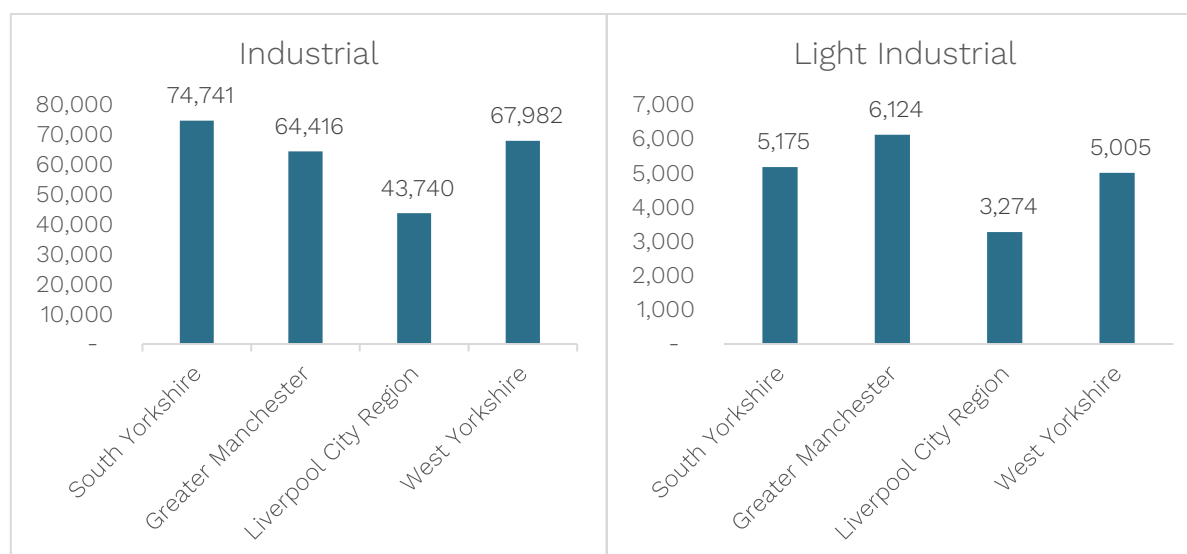
Source: Graphs represent inventory per square foot for every 1,000 people, taken from CoStar.

As well as general office and industrial space the availability of tailored space for nascent and growing businesses is important. Dedicated incubator spaces are important ecosystem assets. A 2019 BEIS paper found that start-ups that have access to incubators, accelerators or co-working spaces are more likely to survive and grow than those that are not part of a formal programme.[10]

Capability development programmes

South Yorkshire has a strong university talent pipeline with a high share of STEM students at undergraduate and postgraduate level as shown in Figure 16. Graduate retention figures are difficult to assess due to lack of publicly available data, however, a 2018 paper about the *Sheffield City Region Future Leaders' Project* stated that while retention immediately after graduation is above average, a higher average number of graduates leave two to three years post-graduation. Of the 4 MCAs South Yorkshire has the highest share aged 20-24 with NVQ4+ and the lowest share aged 25 to 29 year olds with NVQ4+ which is consistent with this identified pattern of initial retention followed by departure.

South Yorkshire has a mixture of general business support and targeted accelerators including: Transform SY[11]; Barnsley DMC; RiDO; UoS Entrepreneurship; Launchpad (Business Sheffield); Barclays Eagle Labs; Business Doncaster.

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[10] The impact of business accelerators and incubators in the UK. BEIS 2019.
[11] Previously ERDF funded, not currently in operation.

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Figure 16 – Share of students enrolled in STEM subjects.
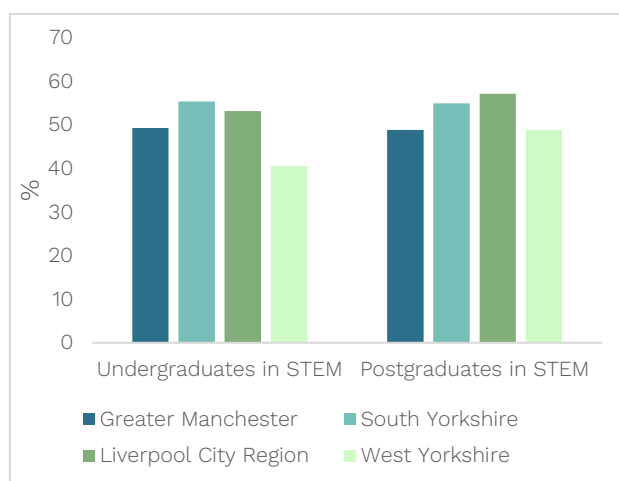
Source: HESA. HE student enrolments by HE provider and subject of study.

Networks and Linkages

The strength of networks and linkages is best established through engagement with those with first-hand knowledge of the business and innovation landscape in South Yorkshire. However, there is some suggestive evidence that these could be strengthened.

According to the UK Innovation Survey South Yorkshire is the second highest rated subregion in the UK for the number of innovation active businesses (though data on R&D spend shown on page 30 suggests that the volume of R&D undertaken is not high). Table 8 shows that South Yorkshire is active in product and process innovation but less innovative in terms of strategy/marketing. Notable is the low proportion who are collaborating within business groups compared to the UK average and to sub-regional comparators.

Table 8 – Percentage of Businesses Reporting Innovation Activity.

	Innovation active (%)	Product innovator (%)	Process innovator (%)	Strategic & marketing (%)	Performing Internal R&D (%)	Collaborating in business group (%)
United Kingdom	44.9	20.5	16.2	34.1	16	51.5
South Yorkshire	**57.5**	**35.9**	**21.3**	**22.7**	**22.3**	**41.9**
Greater Manchester	45.8	25.1	12.9	35.2	19.8	46.8
Merseyside	45.2	23.2	15.7	35.7	17.9	35.1
West Yorkshire	42.5	26.1	17.9	27.7	23.3	44.9

Source: UK Innovation Survey, 2021.

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Networks, R&D, Finance

This section explores the business base, and finance and investment activities in South Yorkshire. The region has a lower business density than comparators and each of the local authorities are ranked low on Economic Complexity. Unlike other core cities, Sheffield does not rank highly in an Economic Complexity index. Levels of private capital investment and expenditure on R&D are low while early-stage seed funding makes up a lower share of deals in South Yorkshire.
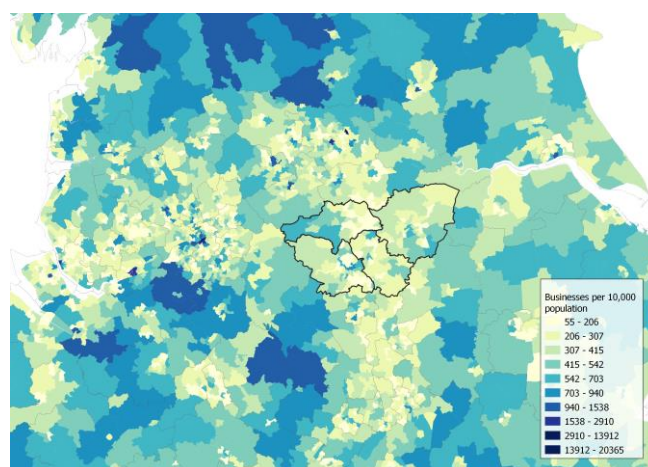
Business Density

Figure 17 – Business density is low compared to the national average.
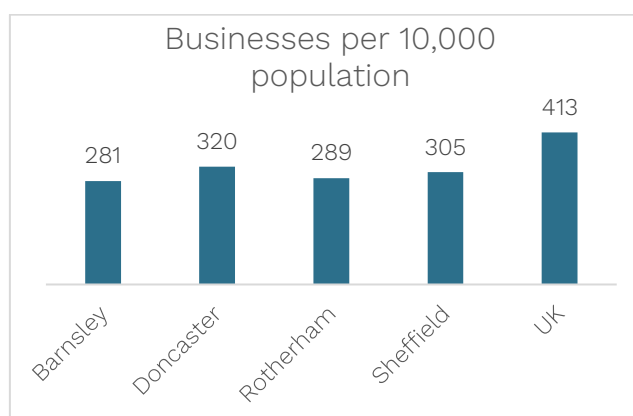
Source: ONS business counts. ONS population estimates. 2021.

Each of the four local authorities have a considerably lower business density than the national average. Doncaster, with the highest business density in South Yorkshire, is 23% below the UK average and would, if it reached the UK level, have an additional 2,800 businesses. Similarly, Sheffield would also see an additional 5,900 businesses come up.

Figure 18 – Sheffield city centre does not have the same level of intense activity as other cities in the North.

Source: ONS business counts. ONS population estimates. 2021.

South Yorkshire's business density relative to the rest of the north is poor. Sheffield, as a core city, lags several urban districts in the north. Central Manchester, Leeds and Liverpool each

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have some of the highest business densities in the north – but so do smaller urban areas such as Warrington, Huddersfield and Hull.

By contrast, no LSOA in South Yorkshire have as many businesses per 10,000 population. Within South Yorkshire, higher business densities can be seen in city centres like Doncaster and the Sheffield-Rotherham corridor, but not to the extent of comparator cities in the north.

Business Size

*Figure 19 – South Yorkshire is not an outlier for business sizes.*
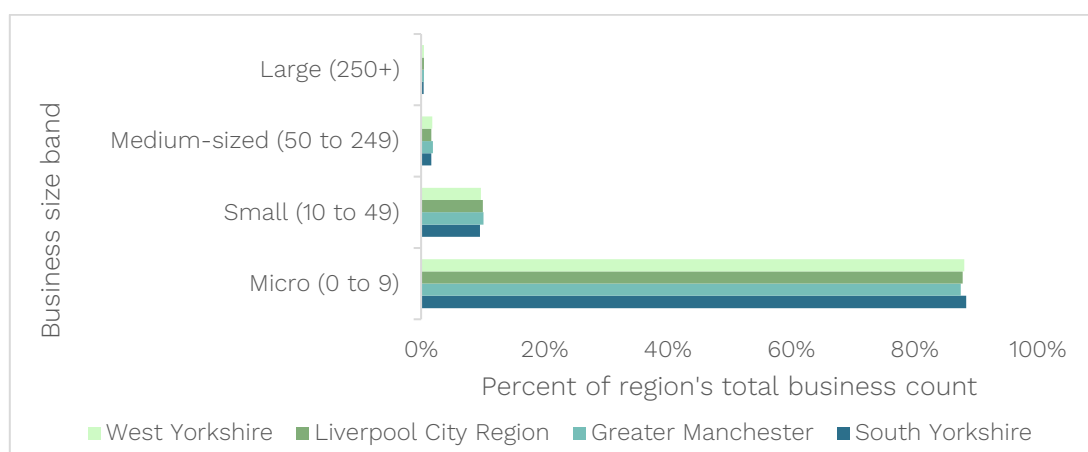
Source: ONS, UK Business Counts, 2023.

South Yorkshire does not differ significantly from the other comparators in terms of business sizes but does have a slightly higher share of micro businesses at 88.4% of the total business base, while the other three comparators have a slightly smaller share ranging between 87.5-88.1%. This means that South Yorkshire has slightly fewer businesses in each of the larger business size bands. This suggests that the immediate economic challenge is business numbers rather than business size.

High Growth Enterprises

Figure 20 – The number of High Growth Enterprises have declined in South Yorkshire since 2017.
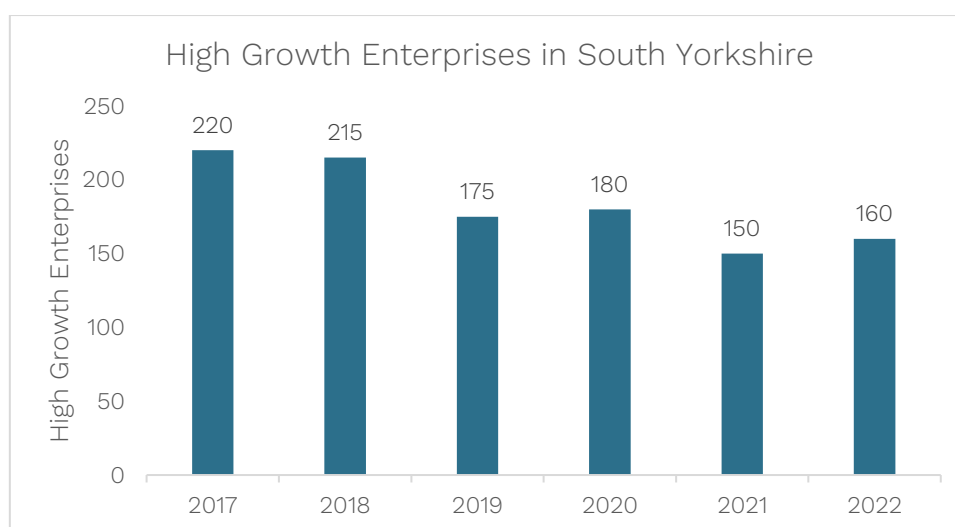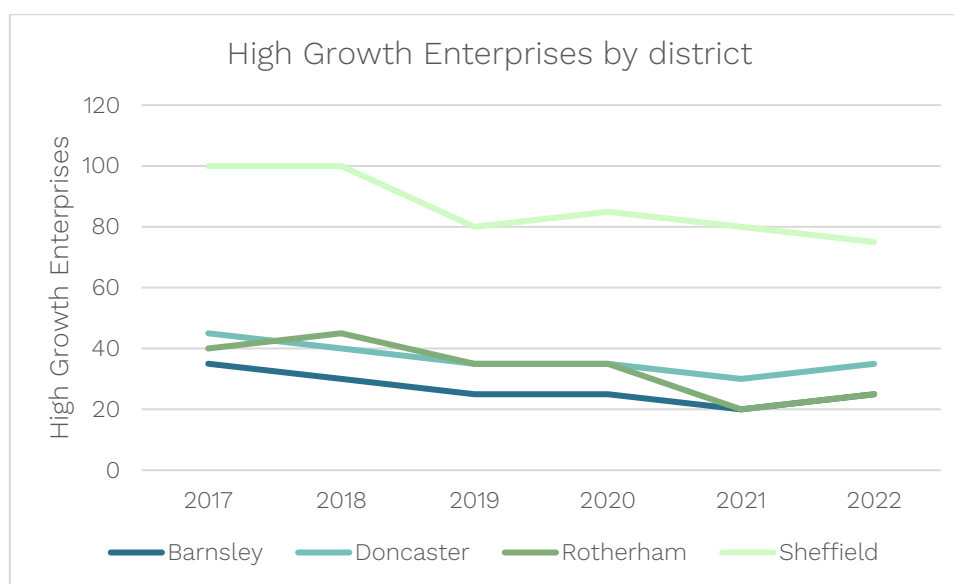

Source: ONS, UK Business Demography, 2023.

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The number of High Growth Enterprises in South Yorkshire fell from 220 in 2017 to 190 in 2022, a 27% fall. This is a higher relative decline than the UK, which declined by 12% in the same period. Greater Manchester and West Yorkshire also saw a decline in High Growth Enterprises across the period, but to a lesser extent than South Yorkshire. Liverpool City Region experienced a rise of 14% of High Growth Enterprises.

The decline in High Growth Enterprises has occurred across South Yorkshire. The most significant decline was felt in Rotherham with a loss of 35 high growth firms since 2017 (a 38% decline). Doncaster had the lowest percentage loss at 22% over the five years, however, this is still a significantly higher loss than the UK (12% decline).

Figure 21 – High Growth Enterprises have declined in all districts.

Source: ONS, UK Business Demography, 2023.

Economic Complexity

Economic complexity is a measure of how much productive knowledge is contained within the economy. Higher scores reflect combination of specialisms indicative of highly productive economic activity. By contrast, more simple economies tend to have subsectors which interact less with others in the economy, requiring less highly specialised knowledge. The Economic Complexity Index (ECI) reflects a ranking of districts based on the similarity of their economic activity, areas with the highest ECI scores are more economically complex.

Figure 22 shows the Industry Product Complexity Index (PCI) on the vertical axis with the proximity of each industry to industries of local authority specialisation on the horizontal axis. The PCI index provides a ranking of industries by the areas in which they cluster and the extent to which they require geographical specialisation. High PCI industries are niche and high value such as financial, professional, and legal services, IT, and creative industries. Areas with high employment in these industries tend to have high ECI scores. Red dots represent industries that have local specialisation, while blue dots represent industries with no local specialisation.
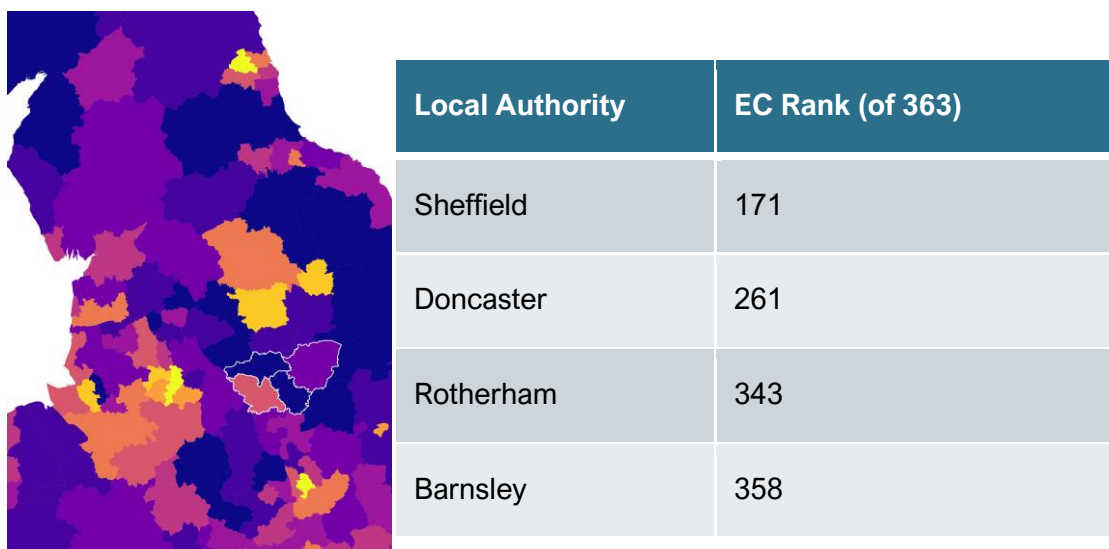
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Figure 22 – South Yorkshire is not as economically complex as its comparators.
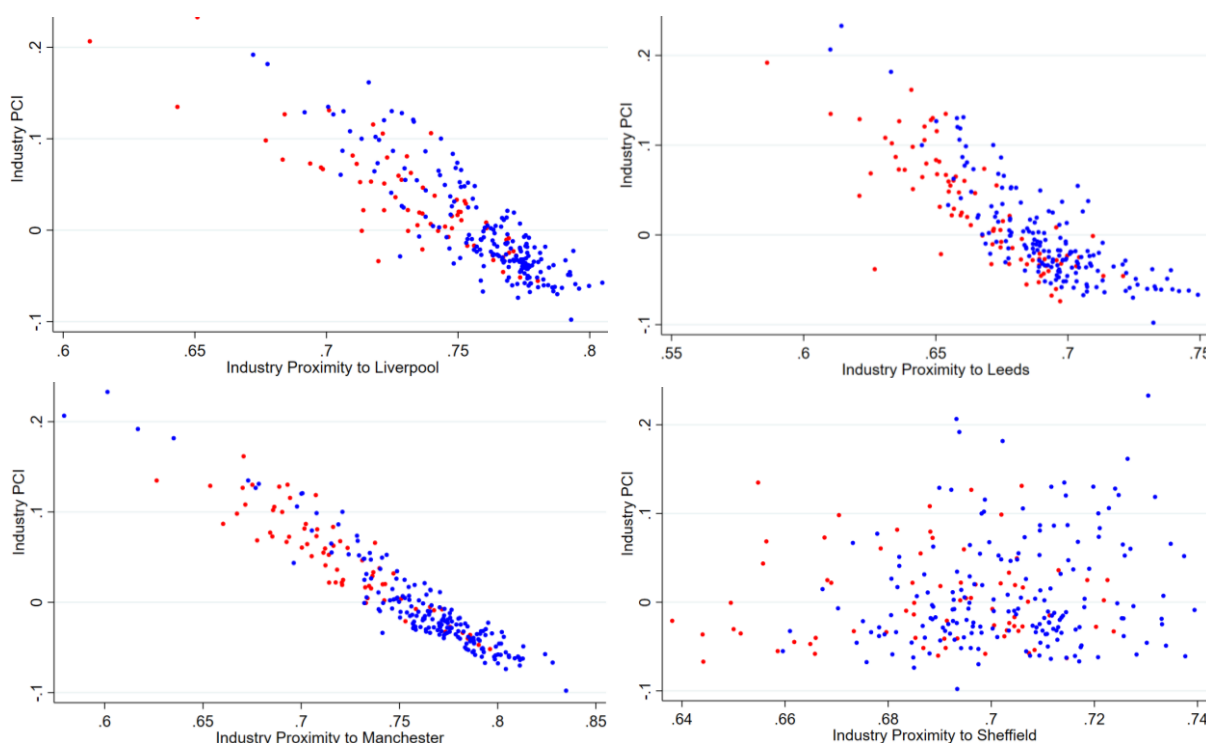
Source: Economic Complexity: The South Yorkshire Case. Davenport 2022.

An upward sloping graph indicates an area that specialises in lower value industries, with lower value growth opportunities. Most towns in the North and Midlands have upward sloping graphs; Doncaster, Barnsley and Rotherham fit this trend. A downward sloping graph indicates an area that specialises in higher value industries, with high value growth opportunities and therefore higher economic complexity. Most large cities such as Liverpool, Manchester and Leeds have downward sloping graphs as seen in Figure 22, but Sheffield does not fit this trend and does not act as a typical 'core city'. Sheffield is an intermediate case with some areas having high value existing specialisms and growth opportunities.

Figure 23 – Each local authority does not rank high for economic complexity.

Local Authority	EC Rank (of 363)
Sheffield	171
Doncaster	261
Rotherham	343
Barnsley	358

Source: Metro Dynamics analysis of BRES data. 2023.

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Figure 23 plots the ranking of all 371 local authorities in terms of economic complexity on a map, filtered to show the north of England. Local authorities that are the most economically complex appear yellow on the map, while dark blue represents authorities that are less economically complex. The map demonstrates how the three comparator core cities are significantly more economically complex than Sheffield, as well as other cities in the midlands and the north such as Newcastle, York and Nottingham. The table outlines the economic complexity ranking of each district in South Yorkshire. Both Rotherham and Barnsley are amongst the bottom 11 local authorities in economic complexity, while Sheffield does rank in the top half, it ranks significantly below other comparable UK cities which tend to rank in the top 100 local authorities.

Investment

The graphs below compare the investment into fixed capital in South Yorkshire to city region comparators and within South Yorkshire itself. In 2020, South Yorkshire saw £3,755 invested per capita into fixed capital, this figure has increased by £1,350 since 2014, overtaking West Yorkshire, but still lagging both Greater Manchester and Liverpool City Region. If Gross Fixed Capital Formation (GFCF) per capita in South Yorkshire were the same as in Greater Manchester, South Yorkshire would see an additional £800m invested in capital in 2020. Significant increases in GFCF per capita since 2014 has been largely driven by Sheffield within South Yorkshire, while the other local authorities have seen a gentler increase across the period.

Figure 24 – Investment in fixed capital assets is lower than comparators.
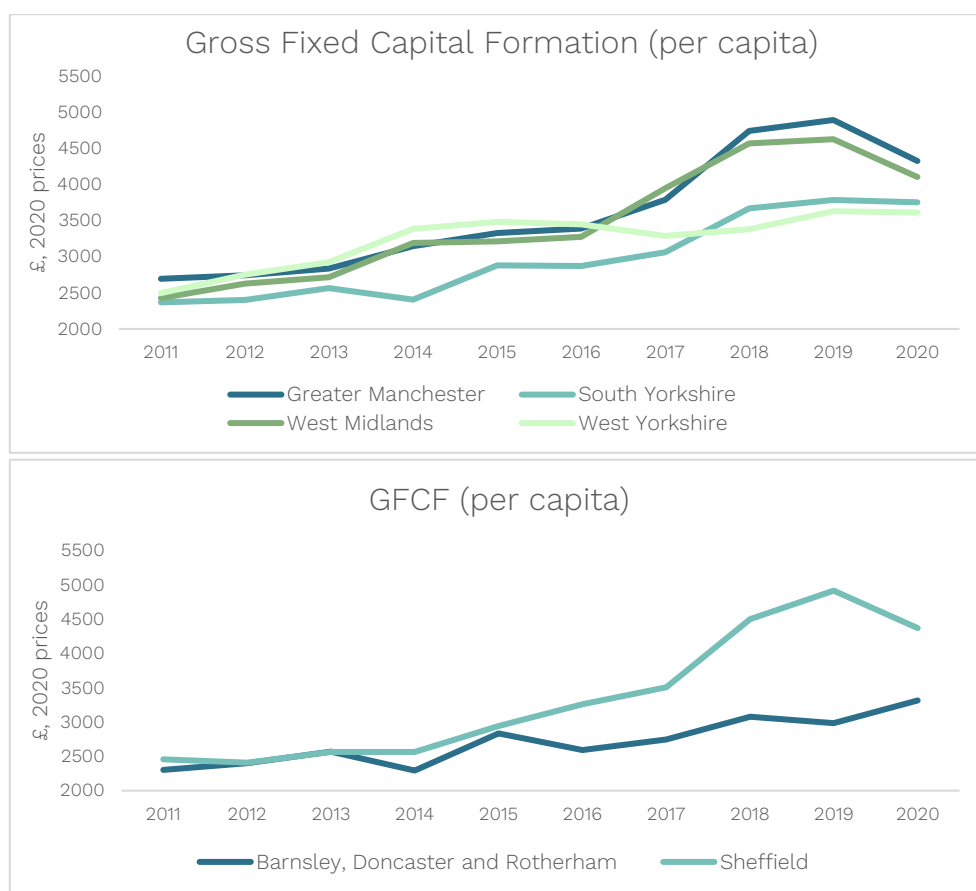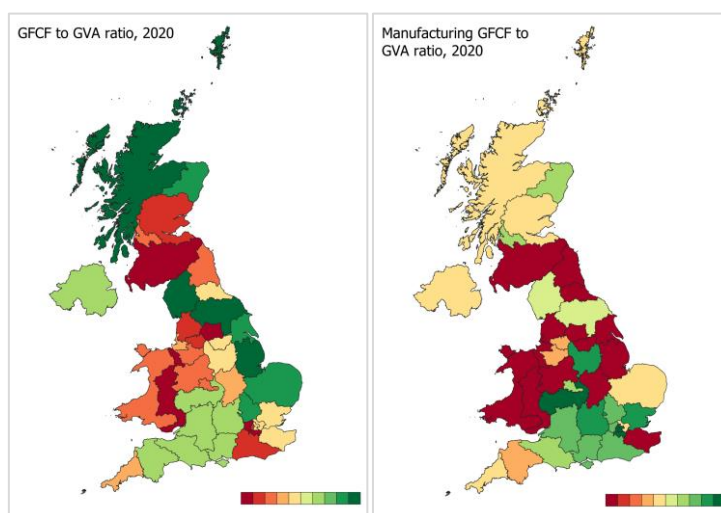

Source: Experimental regional gross fixed capital formation (GFCF) estimates by asset type.

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Figure 25 looks at the ratio of total GFCF to GVA, a measure of business investment, in 2020. In terms of this measure, South Yorkshire is not a major outlier. However, given the region's weak productivity performance, a higher level of investment relative to other places may be desirable to close the gap. For Manufacturing, South Yorkshire falls within the lowest decile for GFCF as a ratio of GVA. This is a result of lower investment than other places, rather than higher GVA.

Figure 25 – South Yorkshire is not a significant outlier in gross fixed capital formation nationally.

Source: Experimental regional gross fixed capital formation (GFCF) estimates by asset type. Regional GVA by sector.

There are geographic disparities within South Yorkshire for Innovate UK investments (see Figure 26). Sheffield receives the most investments, with some postcodes in the city centre receiving more investments than Barnsley or Rotherham. Advanced Manufacturing Innovation District also receives a large share of investments within the region, with the majority of Rotherham's investments within the Investment Zone.

Figure 26 – Highest share of innovate UK investments centred around the Sheffield-Rotherham corridor.
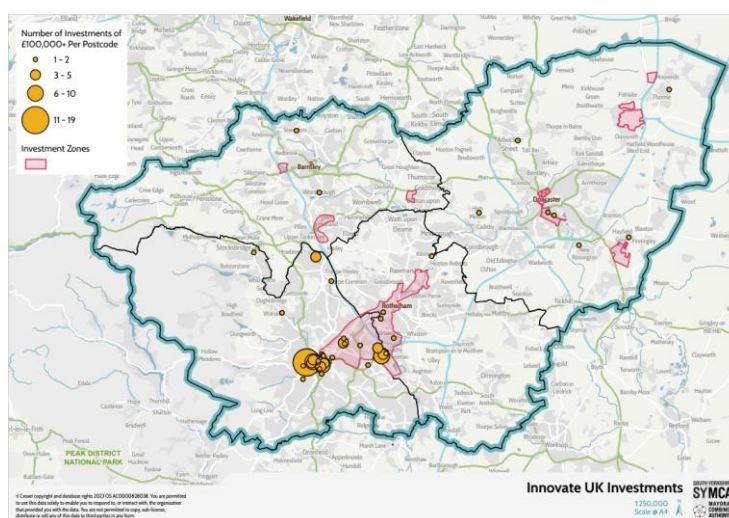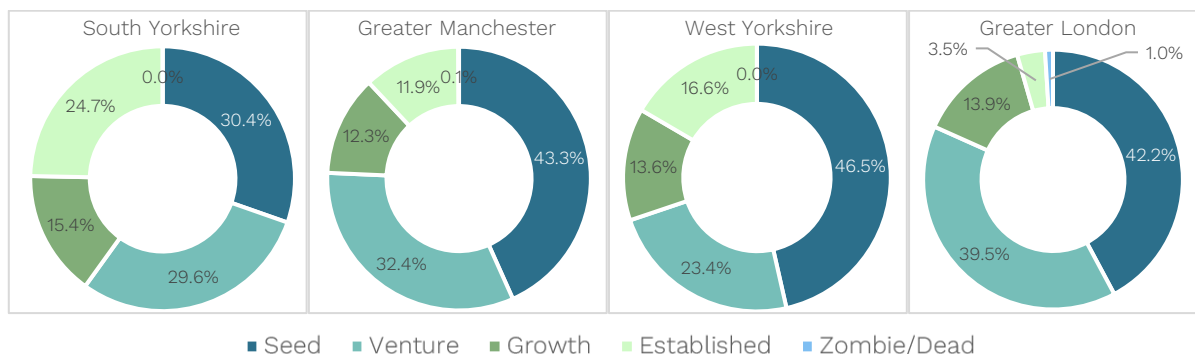

Source: SYMCA analysis of IUK grants, 2023.

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Access to Finance

Figure 27 – South Yorkshire businesses are less likely to raise funding at the 'seed' stage.

Source: SYMCA internal analysis, drawing upon Beauhurst data.

South Yorkshire businesses are less likely to raise funding at the 'seed' stage[12] at just 30.4% rather than at subsequent stages compared to Greater Manchester and West Yorkshire. This may also have longer-term implications as early-stage finance rounds are opportunities for businesses gain access to expertise, networks and mentorship which help them to grow.

Figure 28 – The technology sector receives a strong share of funding in South Yorkshire.
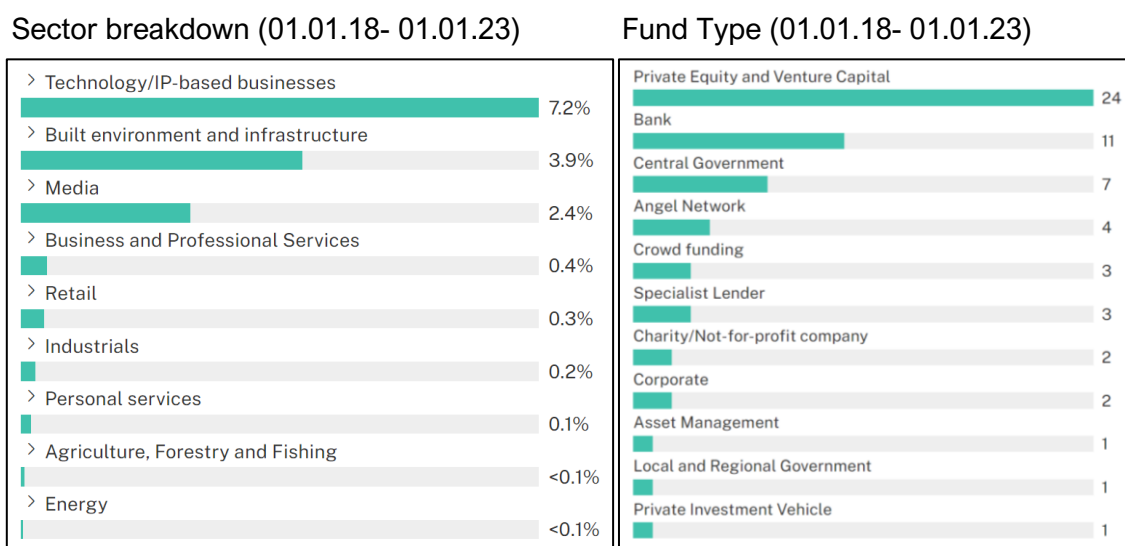
Source: SYMCA, South Yorkshire's Business Finance Landscape.

The main type of funding received by South Yorkshire businesses is Private Equity and Venture Capital. The overall trend is similar to both Greater Manchester and Greater London. The sector breakdown is similar too. Northern Gritstone is the top funder for businesses in South Yorkshire, while NPIF Equity finance funds the largest number of businesses. Doncaster

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[12] Beauhurst describes the 'seed' stage as a "youngest company with a small team, low valuation and funding received (low for its sector, uncertain product-market fit or just getting started with the process of getting regulatory approval".

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businesses received the lowest amount of equity investment and accelerator attendance in South Yorkshire.

R&D

Figure 29 - R&D is weak, particularly in the private sector.
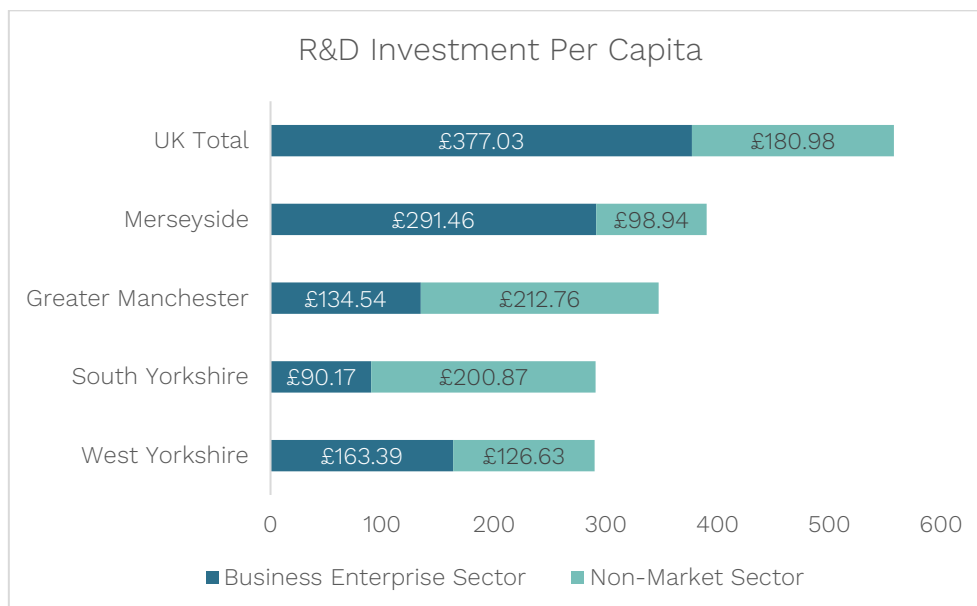
Source: Eurostat, 2018. GERD by sector of performance and NUTS2 regions.

Total R&D spending per capita is low in South Yorkshire at £291, £277 below the UK average. Most R&D investment is also derived from the public sector as only £90 per head is invested by the private sector. Businesses accounted for just over 30% of spending on R&D in 2018 compared to 68% nationally, this is also a lower share of total R&D spending than all comparator city regions.

The total R&D spending in South Yorkshire was £408.3m. If the leverage rate of private spend by public spend was the same as Greater Manchester, where non-market sectors also make up a large share of R&D, this would amount to an additional £50m. If it reached the level in West Yorkshire, this would result in an additional £200m in private R&D for South Yorkshire.

Trade and FDI

This section draws upon the internationalisation work previously undertaken by OCO Global and Metro Dynamics for South Yorkshire.[13]

Exports in South Yorkshire grew prior to the pandemic from £5.2bn in 2017 to £6.1bn in 2019. Services was the fastest growing sector, growing by 28%, with manufacturing growing by 10%. However, goods exports still outnumber services exports by two to one; in 2019, South Yorkshire exported £3.8bn in goods and £2.3bn in services.

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[13] OCO Global and Metro Dynamics, South Yorkshire Mayoral Combined Authority – International Plan, 2022.

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Trade is concentrated internationally, with five countries accounting for 30% of all South Yorkshire goods exports in 2019. Four of the top five goods export markets for South Yorkshire were located in the EU (Germany, Sweden, Ireland and France). USA, being the fifth, provided the highest single goods export market in total.

Figure 30 – Goods exports to the EU exceed non-EU exports.
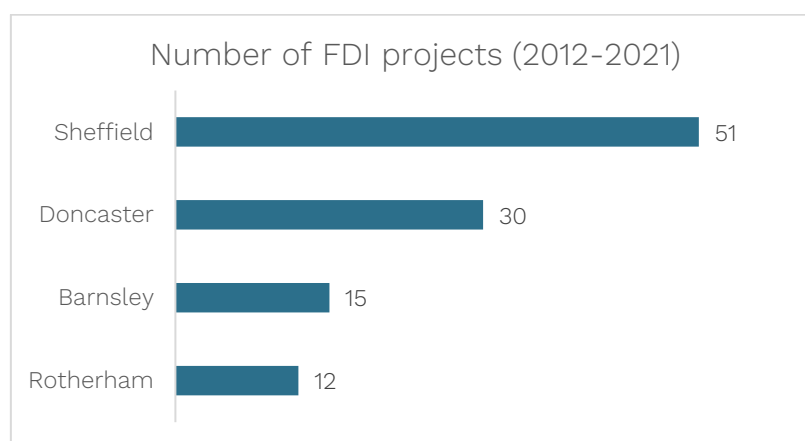

Sub-regional goods export performance 2019 (£m)
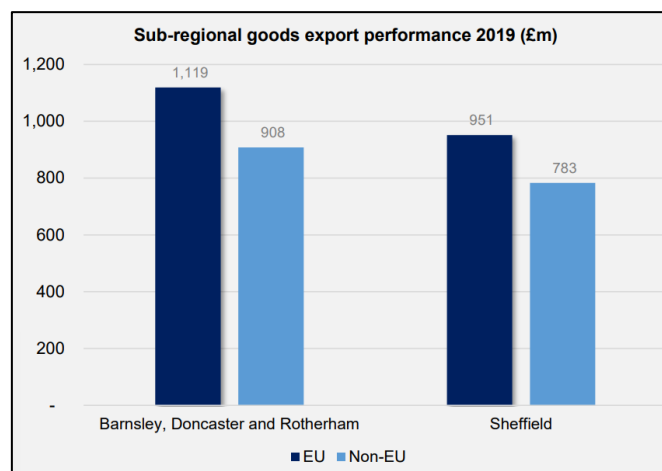
Source: OCO Global and Metro Dynamics, SYMCA – International Plan, 2022.

In 2019, the value of goods exported from Barnsley, Doncaster and Rotherham exceed exports from Sheffield by 17%. Goods exported from Barnsley, Doncaster and Rotherham to the EU was 23% higher than exports to non-EU countries, Sheffield saw a similar difference as 21% more exports went to the EU than non-EU countries.

South Yorkshire places ninth out of 11 regions in the Northern Powerhouse for goods exports, though the data is highly uncertain. However, export value per business is strong in South Yorkshire relative to other regions (c.£1.2m per business, compared to £0.75m in Merseyside) ranking fourth, suggesting that weaker total export performance linked to a relatively low density of exporting businesses.

Whilst there are opportunities in fast growing markets and sectors, these are not currently core strengths in the context of South Yorkshire's exports. In the short term, the biggest opportunities for export and trade are in the services and knowledge economy sectors.

Figure 31 – Most FDI projects in the past decade have gone to Sheffield and Doncaster.
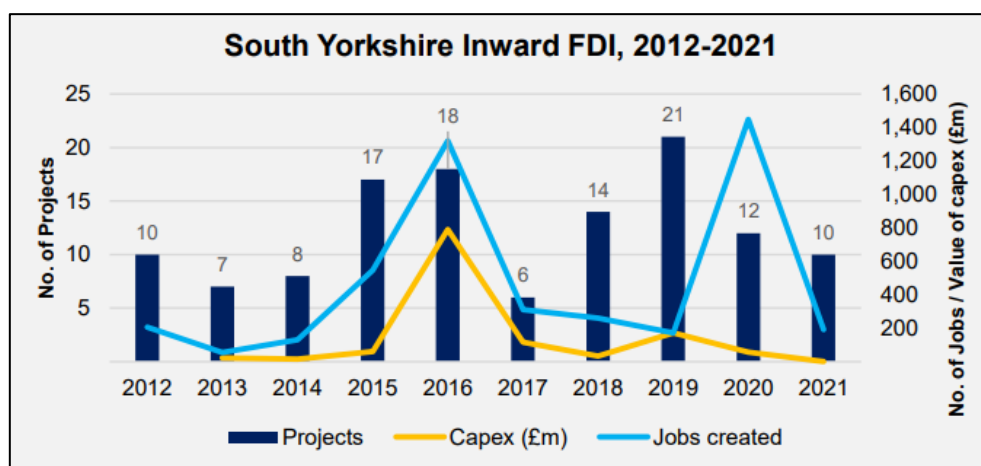

Number of FDI projects (2012-2021)

Source: OCO Global and Metro Dynamics, SYMCA – International Plan, 2022.

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Barnsley, Doncaster and Rotherham saw 12% more FDI projects in ten years than Sheffield, more than half of which were in Doncaster. Companies from 27 countries invested in South Yorkshire from 2012 to 2021 with the US being the largest source, accounting for 30% of projects, almost three times more than any other country.

Figure 32 – Jobs created closely ties to the number of projects and total value of FDI.

Source: OCO Global and Metro Dynamics, SYMCA – International Plan, 2022.

There is a link between FDI projects, capital expenditure and FDI job creation in South Yorkshire. South Yorkshire's spike in job creation in 2020 is a result of Evri's (formerly Hermes) c.£60m investment in Barnsley that generated an announced 1,300 jobs, almost a third of all jobs created through FDI over the last decade.[14]

Industrial equipment received the largest number of FDI projects (e.g. Dual Inventive from Netherlands, Amazone from Germany and Bossa Nova robotics), followed by business and financial services, metals, and digital, each exceeding 10 projects. Logistics is the top contributor to job creation, notable from the large investment by Hermes in 2020. Additional promising sectors for South Yorkshire are Life Sciences (particularly Biotechnology and Medical Devices), Digital and Renewable Energy sectors, which have all shown strong average annual growth rates of 1%, 7% and 7% between 2016 and 2021, respectively.
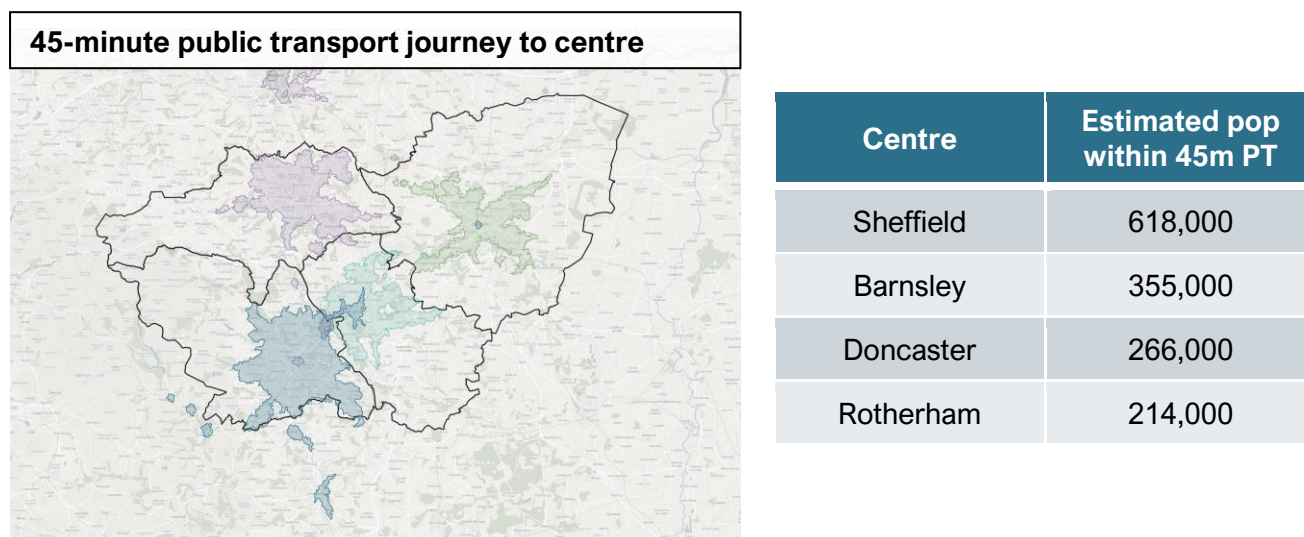
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[14] The Star, Hermes to build largest warehouse in Europe in South Yorkshire – creating 1,300 new jobs, 2020.

Economic Infrastructure – transport, housing, land use and environment

This section explores transport connectivity, housing and carbon emissions in South Yorkshire and how the region performs against comparators. Whilst a large share of the population can commute to urban centres, there are still significant pockets of land disconnected. Sheffield's transport connectivity also lags core city comparators. Housing is generally more affordable in South Yorkshire, compared with other city regions, but there are big disparities between Sheffield and the other boroughs. While CO_2 emissions are in line with the national average, there are disparities in consumption in South Yorkshire, particularly between urban and rural areas.

Transport Connectivity

Figure 33 – An estimated 1,315,000 people live within a 45-minute commute on public transport to one of the four centres.

45-minute public transport journey to centre

Centre	Estimated pop within 45m PT
Sheffield	618,000
Barnsley	355,000
Doncaster	266,000
Rotherham	214,000

Source: Travel Time, API, 2023. ONS, Census 2021.

The size of a region's labour market is key to economic success and can be illustrated by how many people live within 45-minutes of public transport usage from each of the four city centres. In total, 1,315,000 people live within a 45-minute commute of at least one of the four centres which compares well to the region's 1.4 million population. However, this includes people living in towns and cities outside of South Yorkshire such as Chesterfield and Wakefield. There are significant portions of land across all four boroughs which have poor connectivity via public transport. However, these are generally more rural parts of each district with lower population density.

Approximately 618,000 people live within a 45-minute commute of Sheffield City Centre by public transport, just over half the equivalent number for Manchester and below both Leeds and Liverpool (see Figure 34). 11.4% more people can access Sheffield city centre within 45-minutes on public transport than the population of the local authority itself. However, this is significantly less than Leeds, Liverpool and Manchester which have 48.4%, 92.4% and 118.3%

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more people that can access the city centre within 45 minutes on public transport that their population.

Figure 34 – Transport connectivity in Sheffield does not compare well to comparators.

45-minute public transport journey to centre		

City	Estimated pop within 45m PT
Manchester	1,205,000
Leeds	1,007,000
Liverpool	935,000
Sheffield	618,000

Source: Travel Time, API, 2023. ONS, Census 2021.

Transport investment is important for economic growth when built, as the investments directly stimulate local economies, grow labour markets, strengthen supply chains and generate jobs. Good transport increases the likelihood that residents will be matched with a job they enjoy and are good at, this mechanism has a strong impact on productivity. Previous work by Metro Dynamics found that just 28% of South Yorkshire's population live within 30 minutes of Sheffield city centre by public transport and fewer than 1% live within 30 minutes of the Advanced Manufacturing Innovation District. [15] This has an impact on productivity as Sheffield city centre hosts 50% of all tradable jobs in South Yorkshire, while the Advanced Manufacturing Innovation District has seen some of the strongest growth in tradable sectors. An increase in the size of the labour market in South Yorkshire by 10% following transport improvements could generate an additional £3.0bn to £3.3bn in annual GVA.

Housing

Housing affordability is calculated by the average house price, divided by the median annual earnings, demonstrating the number of years it would take to afford the cost of a house. The larger the value means the less affordable a house is.

Figure 35 shows that in 2022, it would take an average of seven years of earnings to buy a house in South Yorkshire. This is less time than the England and Wales average (~11.1 years), Greater Manchester (~8.4 years) and West Yorkshire (~7.4 years), deeming South Yorkshire to have better housing affordability than its comparators.
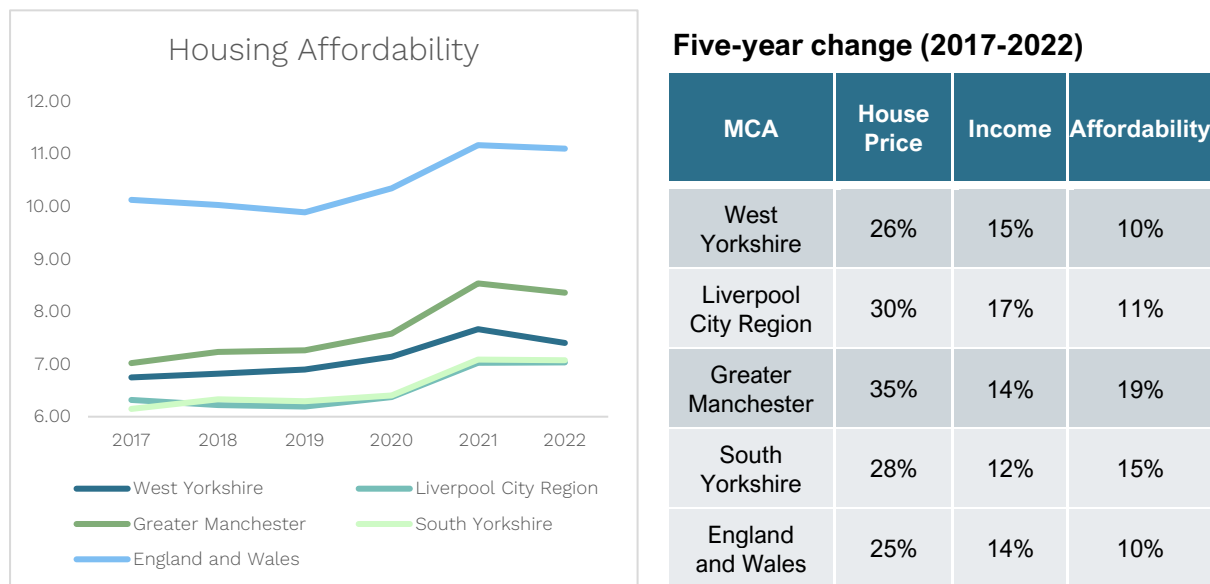
However, housing in South Yorkshire is now 15% less affordable than it was in 2017, a sharper decline in housing affordability than each of South Yorkshire's comparators except Greater

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[15] Metro Dynamics, Transport and productivity in South Yorkshire, 2023.

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Manchester, which saw a decline of 19%. This decline in affordability is driven by incomes rising by a slow rate at just 12% since 2017, despite a significant rise of 28% in house prices.
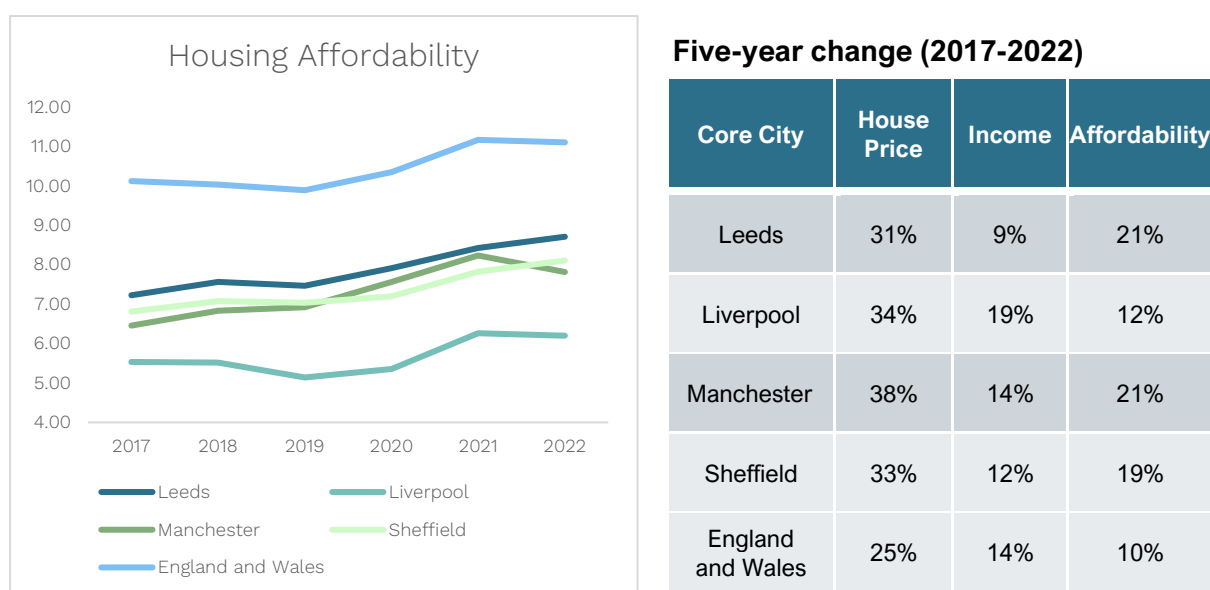
Figure 35 – South Yorkshire is affordable compared to the national average and comparators.

Five-year change (2017-2022)

MCA	House Price	Income	Affordability
West Yorkshire	26%	15%	10%
Liverpool City Region	30%	17%	11%
Greater Manchester	35%	14%	19%
South Yorkshire	28%	12%	15%
England and Wales	25%	14%	10%

Source: HM Land Registry, 2023. ONS, Annual Survey of Hours and Earnings, 2023.

In 2022, it would take an average of 8.11 years of earnings to buy a house in Sheffield, this places Sheffield in line with Leeds and Manchester which have housing affordability ratios of 8.71 and 7.81 respectively (Figure 36). This implies that there is a greater difference in housing affordability between the core city in South Yorkshire and the additional local authorities, when compared to other city regions. Compared to Manchester and Leeds, Sheffield has lower average incomes and house prices.

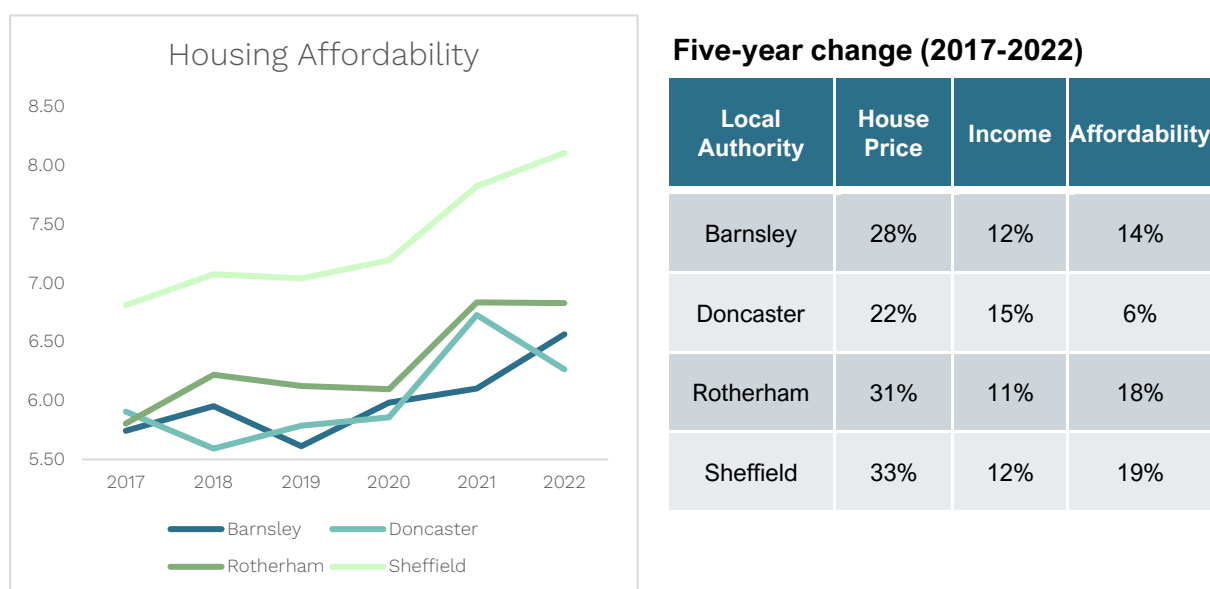*Figure 36 – Sheffield has a similar affordability to Manchester and Leeds.*

Five-year change (2017-2022)

Core City	House Price	Income	Affordability
Leeds	31%	9%	21%
Liverpool	34%	19%	12%
Manchester	38%	14%	21%
Sheffield	33%	12%	19%
England and Wales	25%	14%	10%

Source: HM Land Registry, 2023. ONS, Annual Survey of Hours and Earnings, 2023.

Each core city is also closing the gap with the national average in terms of housing affordability. Manchester, Leeds and Sheffield each are seeing significantly larger declines in affordability than the England and Wales average. These increases in the housing affordability ratio are largely driven by significantly higher rises to house prices than the England and Wales average.

Within South Yorkshire, Sheffield has a significantly higher housing affordability ratio than Barnsley, Doncaster, and Rotherham, where each have housing affordability ratios between six and seven years (Figure 37). Barnsley, Doncaster and Rotherham drive the housing affordability ratio in South Yorkshire down.

Figure 37 – Barnsley, Doncaster and Rotherham are even more affordable.

Five-year change (2017-2022)

Local Authority	House Price	Income	Affordability
Barnsley	28%	12%	14%
Doncaster	22%	15%	6%
Rotherham	31%	11%	18%
Sheffield	33%	12%	19%

Source: HM Land Registry, 2023. ONS, Annual Survey of Hours and Earnings, 2023.

Figure 38 – Sheffield has gained population in its centre at a fast rate.
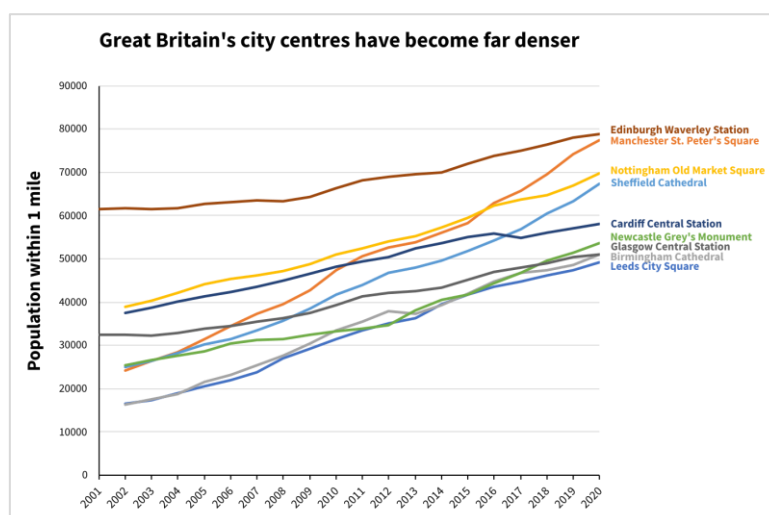
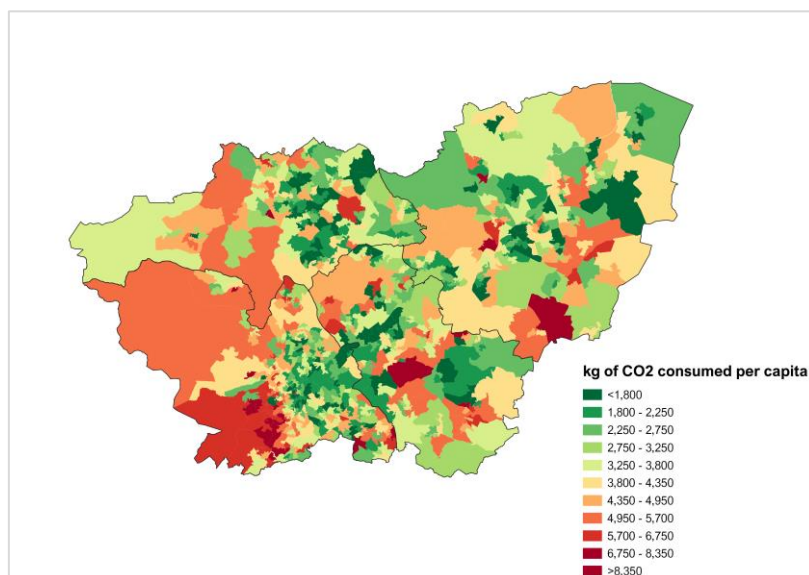Source: Brownfield first, 2021, https://tomforth.co.uk/.

Sheffield has gained population in its city centre at a faster rate than most UK cities. The only city to see a larger increase in population within one mile from the centre was Manchester.

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However, growth in Manchester is associated with significant growth in city centre jobs and productivity, but Sheffield has not yet seen the same effect.

Carbon emissions

Figure 39 – Per capita CO2 consumption is greater in more rural areas.

kg of CO2 consumed per capita
- <1,800
- 1,800 - 2,250
- 2,250 - 2,750
- 2,750 - 3,250
- 3,250 - 3,800
- 3,800 - 4,350
- 4,350 - 4,950
- 4,950 - 5,700
- 5,700 - 6,750
- 6,750 - 8,350
- >8,350

Source: Place Based Carbon Calculator (PBCC), 2023.

Densely populated areas in South Yorkshire are seen to have less kilograms of CO_2 consumed per capita than more sparsely populated rural areas (see Figure 39). In particular, the Sheffield-Rotherham corridor and Doncaster and Barnsley town centres have some of the lowest levels of CO_2 consumption in South Yorkshire. Higher levels of CO_2 consumption per capita are seen in the more rural parts of South Yorkshire, in particular the area to the west of Sheffield city centre, bordering the Peak District.

Figure 40 – Per capita CO2 emissions are falling in each local authority.
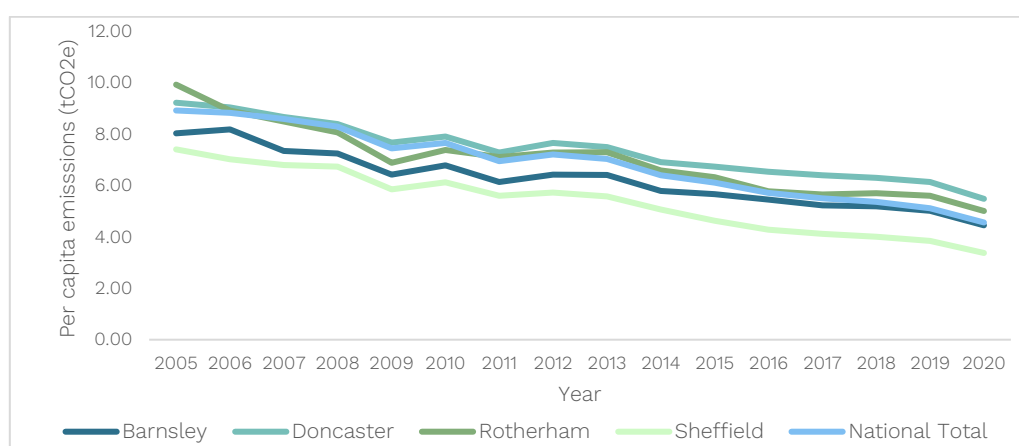
Source: ONS, Department for Energy Security and Net Zero, 2023.

CO_2 emissions per capita are declining at a similar rate to the national average. Between 2005 and 2020, each local authority saw a decline, ranging from 40% in Doncaster and 55% in Sheffield. Both Rotherham and Sheffield saw CO_2 emissions decline at a faster rate than the national average, while Doncaster and Rotherham saw a slower decline in carbon emissions.

Social infrastructure – employment, skills and health

This section summarises labour market statistics in South Yorkshire including incomes, health, economic inactivity, and skills. While South Yorkshire is not a particular outlier in labour market statistics, employment in ethnic minorities is particularly low, especially in Sheffield and Doncaster.

Average earnings across South Yorkshire are closing the gap with the national average but disparities exist across the region. The healthy life expectancy lags comparators, and a significant share of economic inactivity can be attributed to long-term illness. Skills attainment also lag comparators and businesses have reported difficulty in hiring for high-skilled roles.

Table 9 – SYMCA is not a particular outlier with comparators but there are some disparities.

	South Yorkshire		Greater Manchester		Liverpool City Region		West Yorkshire		United Kingdom	
	Variable (%)	5yr change (%)	Variable (%)	5yr change (%)	Variable (%)	5yr change (%)	Variable (%)	5yr change (%)	Variable (%)	5yr change (%)
Employment rate - aged 16-64	73.3	2.2	72.4	0.6	73.7	5.4	73.4	0.3	75.5	1.1
Unemployment rate - aged 16-64	4.7	-23.0	5.0	0.0	3.1	-38.0	3.6	-25.0	3.6	-20.0
% who are economically inactive - aged 16-64	23.0	-2.5	23.8	-1.7	24.0	-9.1	23.9	3.5	21.7	-0.5
% of economically inactive long-term sick	31%	14.2	27%	6.6	35%	8.6	25%	18.8	26%	16.7
Employment rate females - aged 16-64	70.1	3.5	68.9	1.8	71.6	9.1	69.1	2.7	72.2	3.0
aged 16-64 employment rate - ethnic minority	55.7	2.6	60.6	3.2	65.0	6.2	64.8	15.9	69.3	7.4
% with NVQ4+ - aged 16-64 (2021)	37	18.1	39	13.0	39	23.5	38	29.4	43.5	14.5
% with NVQ2+ - aged 16-64 (2021)	77	5.5	76	5.5	78	11.2	75	11.0	78.1	5.3
% with no qualifications (NVQ) - aged 16-64 (2021)	7.0	-25.2	8.3	-14.9	7.9	-35.2	8.5	-23.2	6.8	-18.3

Source: ONS, Annual population survey. Note that sampling may mean some of the differences here are not statistically significant.

Despite a lower economic inactivity rate compared to comparator MCAs, South Yorkshire's unemployment rate is relatively high at 4.7%, this is significantly higher than the UK average, and only lower than Greater Manchester with a rate of 5%. Employment rate is particularly low amongst ethnic minorities at just 55.7% in South Yorkshire. South Yorkshire also has the smallest share of its working age population educated to a higher education level or above (NVQ4+) at 37%. However, it does have a smaller share of the working age population with no qualifications than each comparator MCA.

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Table 10 – Clear disparities exist across South Yorkshire.

|	Barnsley		Doncaster		Rotherham		Sheffield		South Yorkshire	
	Variable (%)	5yr change (%)	Variable (%)	5yr change (%)	Variable (%)	5yr change (%)	Variable (%)	5yr change (%)	Variable (%)	5yr change (%)
Employment rate - aged 16-64	74.0	5%	74.0	2%	73.2	-1%	72.8	3%	73.3	2%
Unemployment rate - aged 16-64	2.7	-51%	3.4	-49%	2.5	-49%	7.0	8%	4.7	-23%
% who are economically inactive - aged 16-64	23.9	-4%	23.4	6%	24.9	11%	21.7	-11%	23.0	-3%
% of economically inactive long-term sick	34%	10%	27%	-18%	32%	20%	33%	34%	31%	14%
Employment rate females - aged 16-64	68.6	6%	71.8	3%	74.5	9%	68.0	1%	70.1	4%
aged 16-64 employment rate - ethnic minority	68.0	9%	53.9	-18%	82.8	32%	50.7	1%	55.7	3%
% with NVQ4+ - aged 16-64 (2021)	31.2	16%	27.2	10%	31.9	27%	45.1	18%	37	18%
% with NVQ2+ - aged 16-64 (2021)	73.4	6%	73.6	4%	72.9	13%	80.9	3%	77	6%
% with no qualifications (NVQ) - aged 16-64 (2021)	9.3	-13%	9.4	19%	8.3	-29%	4.2	-49%	7.0	-25%

Source: ONS, Annual population survey, 2023. Note that sampling may mean some of the differences here are not statistically significant.

Within South Yorkshire, poor unemployment rates are heavily impacted by Sheffield as each of the other four districts perform better than the national average. Economic inactivity exceeds the national average in all districts but is particularly bad in Rotherham at 24.9%. Long-term sickness as a reasoning for economic inactivity is particularly high in Barnsley and Sheffield. Barnsley, Doncaster and Rotherham all face issues in skills as the share of the working age populations that are qualified is significantly less than the national average.

Incomes

Gross disposable household income (GDHI) is an estimate of the income available after taxes and transfers. It is used to measure the "material welfare" of households. The charts below demonstrate the GDHI per head index (UK=100) in South Yorkshire and comparator MCAs. In South Yorkshire, GDHI per head has declined relative to the national average from 84% in 2000 to 78% in 2020. A decline relative to the national level has also been seen in the comparator regions, but since 2014, the gap between South Yorkshire and these places has been widening.

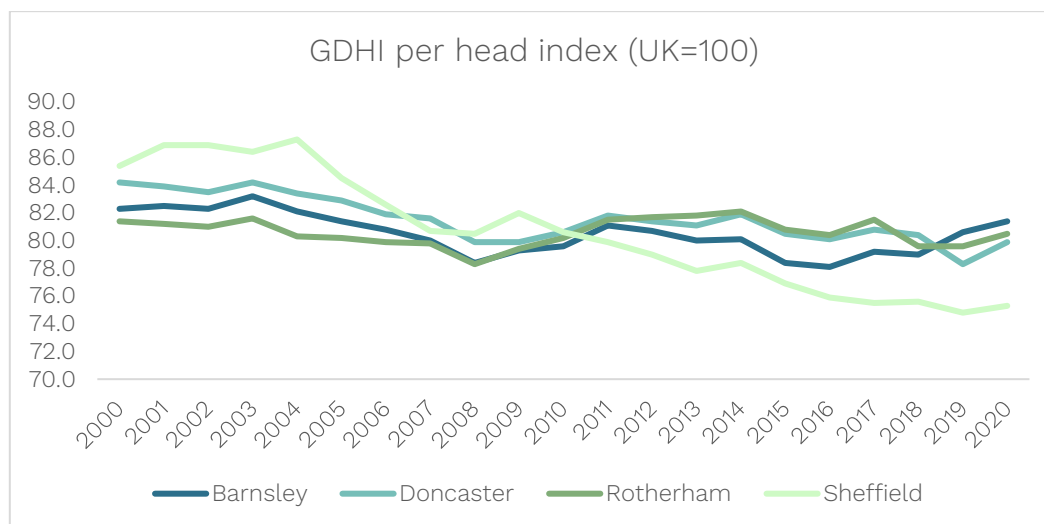*Figure 41 – Disposable household incomes in South Yorkshire are weak.*
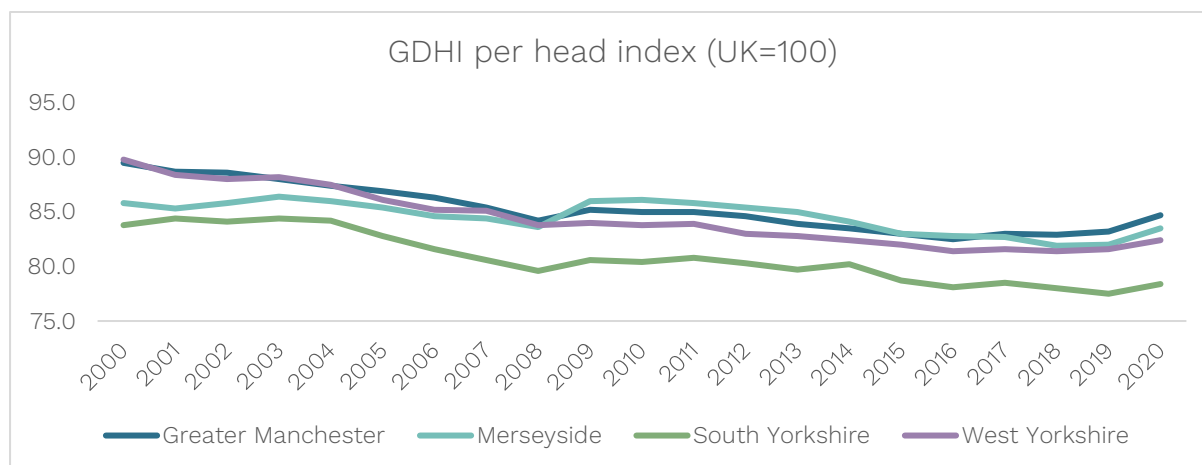
Source: ONS, Regional gross disposable household income, 2022.

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Within South Yorkshire, the sharpest relative decline has occurred in Sheffield where GDHI per head in 2020 was three quarters of the UK average. Over the 20-year period, Sheffield has moved from being the area with incomes closely resembling the UK average to the area with the largest gap.

Figure 42 – GDHI per head has sharply declined in Sheffield.

Source: ONS, Regional gross disposable household income, 2022.

The map below highlights the total annual household income of each MSOA in South Yorkshire. The map shows clear geographic disparities in household incomes. The most affluent parts of South Yorkshire can be found to the west of Sheffield city centre, where a large portion of households have a total income of over £55,000.

*Figure 43 – There are clear geographic disparities in household incomes.*
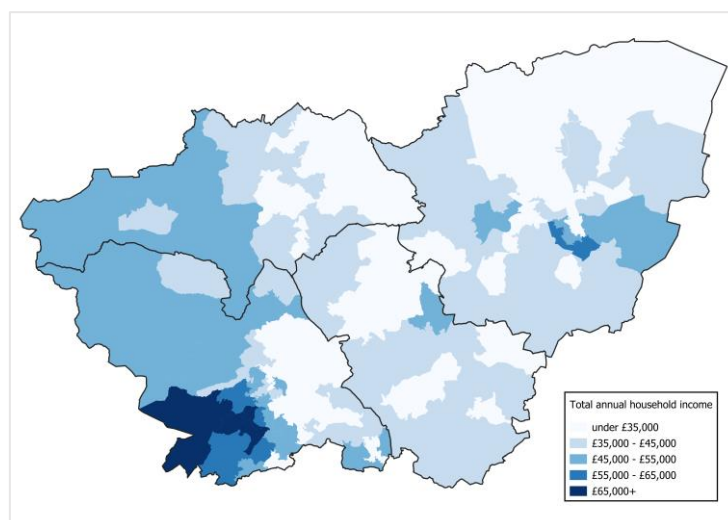
Source: ONS, Income estimates for small areas, financial year ending 2020.

Most households in South Yorkshire have total incomes between £22,000 to £45,000. Only a small number of neighbourhoods outside of Sheffield have an average household income of more than £55,000, most of which are found to the west of Sheffield city centre.
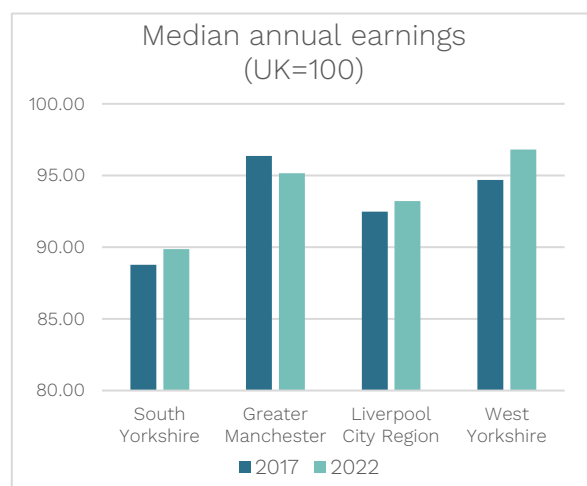
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Figure 44 – A higher share of jobs pay below the Real Living Wage, but this has decreased markedly between 2020 and 2022.
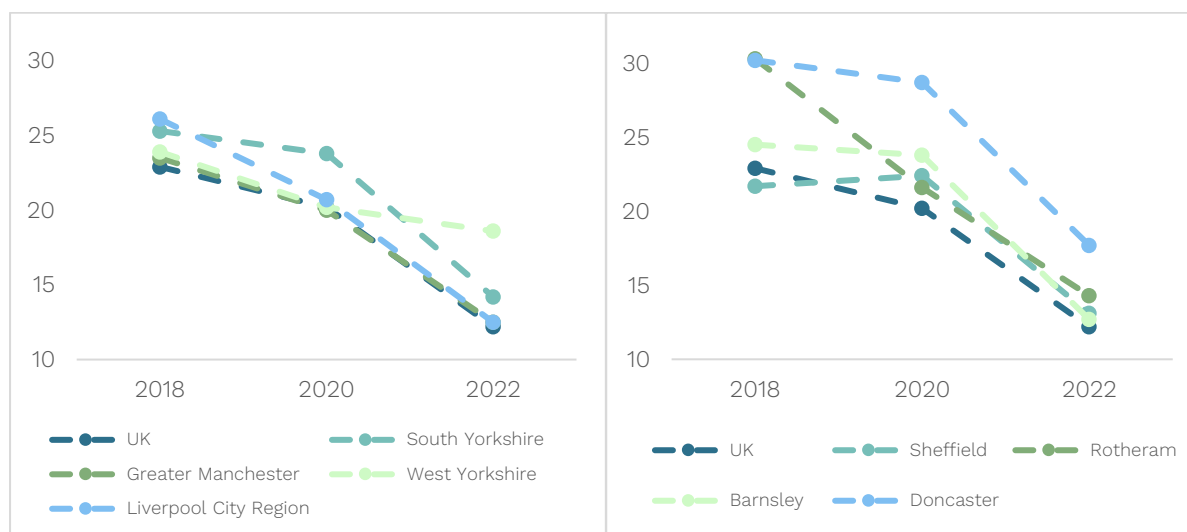
Source: Annual population survey, 2023.

The share of jobs earning below living wage has decreased in every city region and the South Yorkshire local authority. Since 2020, South Yorkshire has closed the gap with the national average and now has the second highest share of jobs earning below the real living wage at 14.2%, overtaking West Yorkshire which has a share of 18.6%. Within South Yorkshire, Rotherham had the largest decline as the share of jobs in 2022 earning below real living wage was less than half of 2018. However, all districts experienced significant declines in low paying jobs since 2018.

Figure 45 – Median annual earnings have narrowed the gap to the national level.


In 2022, South Yorkshire had a median annual gross pay of £24,942. This is 10.1% less than the national average. This is a larger gap to the national average than the other comparators which median earnings range from 3.2%-6.8% less than the UK average.

Each city region besides Greater Manchester saw the gap to the national average decrease, the largest change was felt in West Yorkshire which overtook Greater Manchester in median annual earnings.

Source: Annual Survey of Hours and Earnings, 2023.

Health

*Figure 46 – South Yorkshire has a lower Healthy Life Expectancy than comparators.*
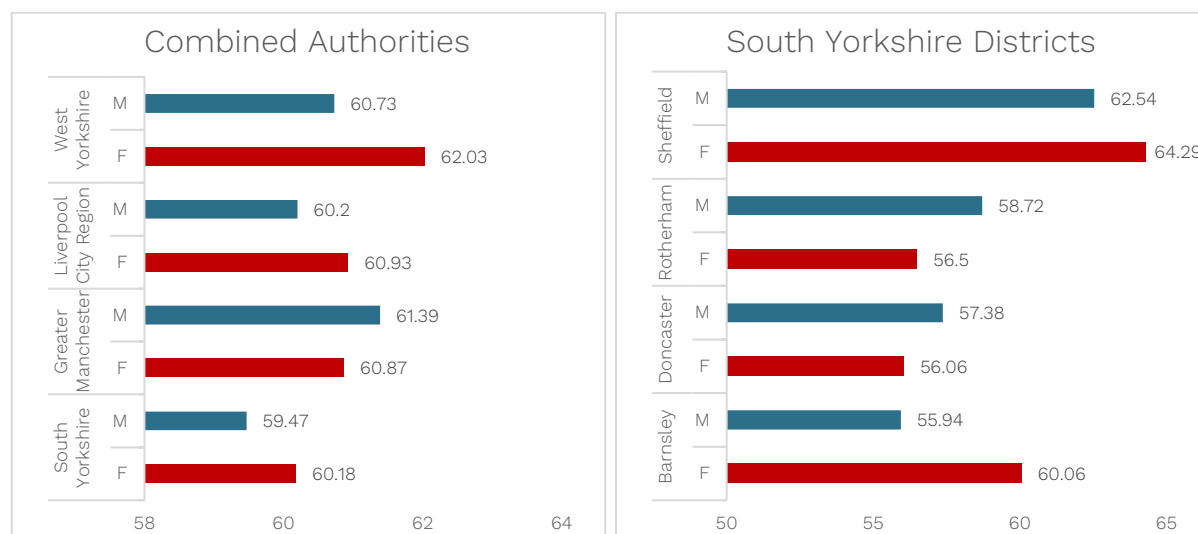
Source: ONS, Healthy Life Expectancy (HLE), 2018-2020.

South Yorkshire has the lowest healthy life expectancy (HLE) for both the male and female sex at 59.47 and 60.18 respectively. Large inequalities also exist within the South Yorkshire districts, HLE at birth for women is over eight years higher in Sheffield than in Doncaster, suggesting that healthy living in South Yorkshire does vary by location. Rotherham and Doncaster stand out as outliers where men have a higher HLE than women, in opposition to the typical pattern we see both nationally and globally.

Economic Inactivity

Figure 47 – Long-term illness is a large driver of economic inactivity in South Yorkshire.
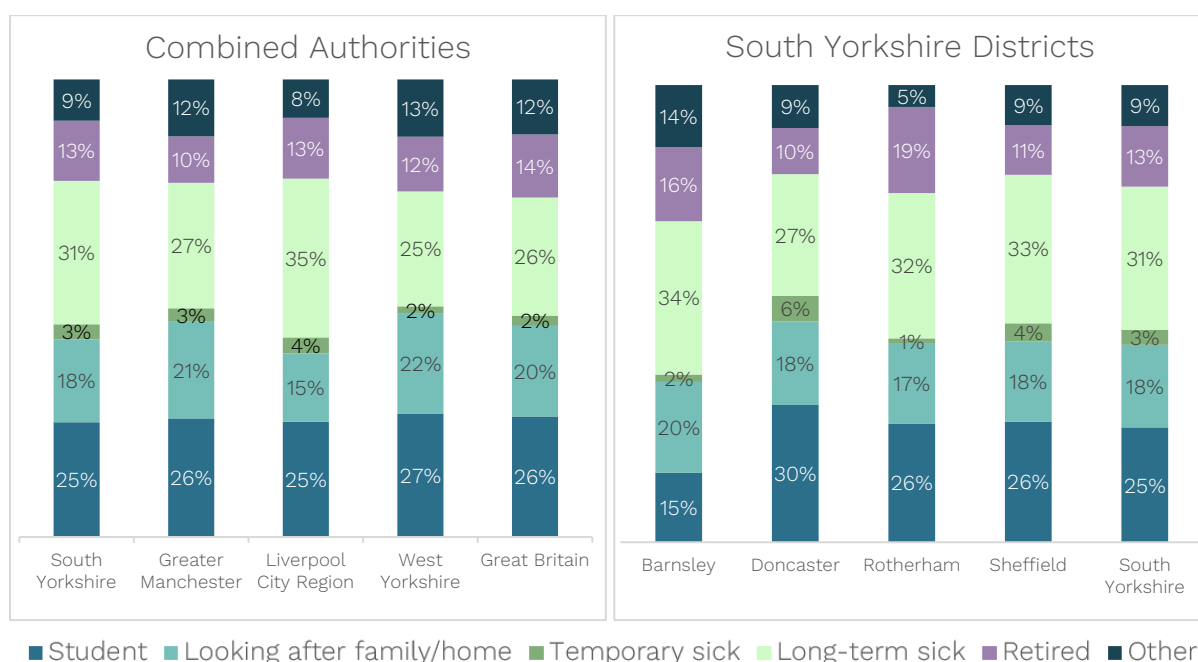
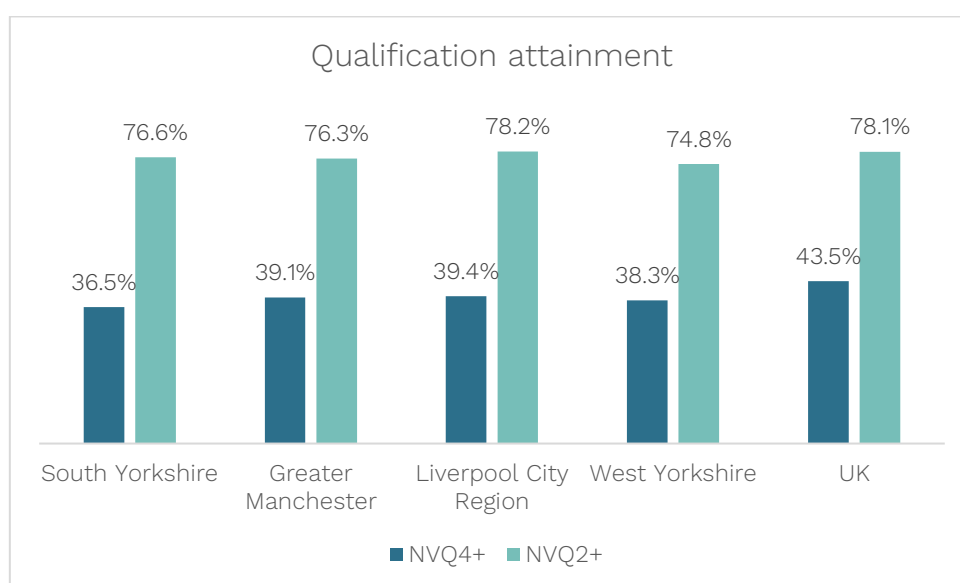Source: ONS, Annual population survey, 2023.

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The top reasoning for economic inactivity in South Yorkshire is attributed to long-term sickness, with 5% more people than the Great Britain average suggesting that in South Yorkshire. The region also has a higher share than Greater Manchester and West Yorkshire, but less than Liverpool City Region. South Yorkshire also has a larger share of economic inactivity being attributed to temporary sickness than the Great Britain average.

All four local authorities have a greater share of long-term sickness as a reason for economic inactivity than the Great Britain average, but Barnsley, Rotherham and Sheffield have a particularly high share. Barnsley and Rotherham also have a large share of people that are retired compared to other districts and the Great Britain average.

Skills

The share of South Yorkshire's working age population achieving an NVQ2+ qualification (five or more GCSEs equivalent) was 76.6% in 2021, slightly below the UK average of 78.1%, but above both Greater Manchester and South Yorkshire. However, Sheffield has a relatively low share of its working age population qualified to the NVQ4+ level (higher education equivalent or above) at just 36.5%, significantly less than the UK average of 43.5%. This is also lower than city region comparators, each of which nearly have at least 2% more of their population qualified to the NVQ4+ level. This implies there is more that can be done to encourage students to enter higher education in the region.

Figure 48 – South Yorkshire has a smaller share of its working age population qualified to a higher education level than its comparators.


Source: ONS, Annual population survey, 2021.

Within South Yorkshire, Doncaster has a particularly low share of its population qualified to the NVQ4+ level at just 27.2%, but both Barnsley and Rotherham also have lower shares of their population qualified to the higher education level than the South Yorkshire average.

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Figure 49 – Businesses are reporting most significant challenges in hiring skilled and professional staff.

In the last three months businesses have had difficulty in recruiting:
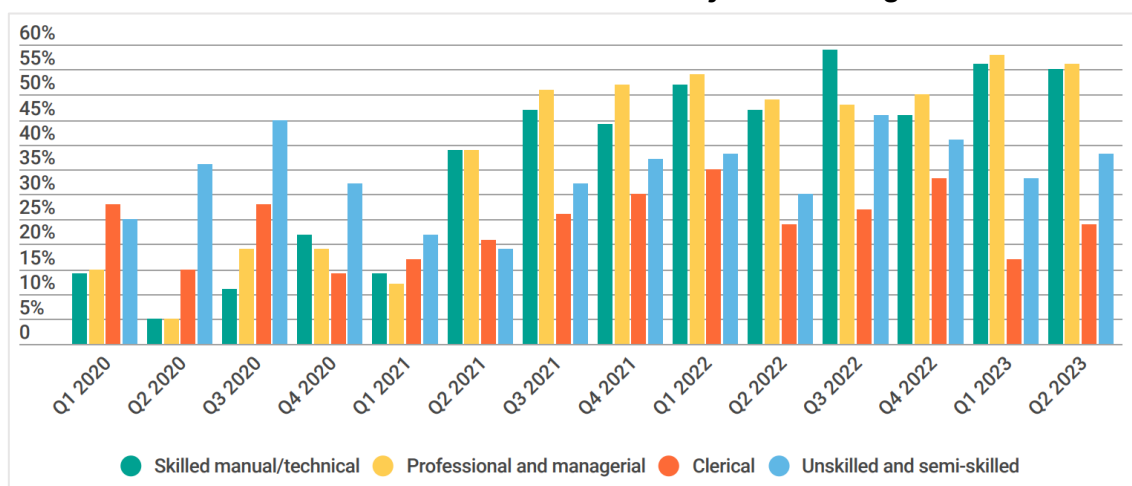
Source: South Yorkshire Economic Survey, 2023.

Figure 4950 shows the roles which businesses have reported that they had difficulty recruiting in the three months preceding the survey. In 2020, South Yorkshire businesses had more difficulty recruiting for clerical and unskilled workers. However, since then businesses have reported challenges in hiring for skilled and professional roles, with more than 50% of businesses reporting difficulty in recruiting for these roles in 2023. Up to Q2 2023, a higher share of businesses has reported challenges hiring for skilled and professional roles compared to the year prior.

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3 Waterhouse Square

138 Holborn

London

EC1N 2SW

020 3865 3082

metrodynamics.co.uk

1 St Peter's Square

Manchester

M2 3DE

0161 883 3736