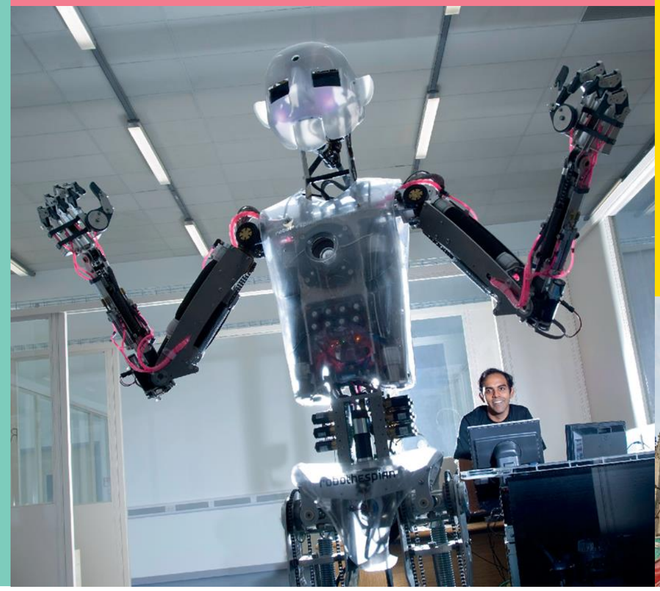
West of England LOCAL ENTERPRISE PARTNERSHIP

WEST OF ENGLAND Combined Authority

WEST OF ENGLAND LOCAL INDUSTRIAL STRATEGY

SUMMARY OF EVIDENCE

FEBRUARY 2019



Introduction

This document summarises the evidence that has been gathered to guide the development of the West of England Local Industrial Strategy.

It highlights a number of strategic challenges that hold back productivity growth. We are seeking to understand the key factors that support the success of our region.

It is a starting point for discussion on the strategic implications, and research will continue.

Local industrial strategy objective

The objective of the West of England Local Industrial Strategy is:

- to deliver long-term growth that is inclusive and clean
- to accelerate economic growth by strengthening productivity to ensure that the region creates high-quality, well-paid jobs for our residents

Contents of evidence base

We have analysed our research against economic foundations for boosting productivity and earnings across the country. The evidence pack consists of the following documents:

1. Summary of evidence (this document)
2. People & skills: demographics and skills supply and demand
3. Innovation: report of research exploring the role of collaborative innovation and how this can be supported
4. Infrastructure: material in complement to Joint Spatial Plan and Joint Local Transport Plan
5. Business environment: productivity and business growth
6. Economic connectivity: research commissioned from PWC exploring economic flows between the West of England and other regions
7. Grand Challenges: summary of each of the Grand Challenges (including the workshops) setting out high level conclusions and potential next steps
8. Report library: full summary table of available evidence with links to published data. Further unpublished reports included as an appendix.

Issues for consideration

Our early analysis of the evidence base identifies four key issues to consider in raising productivity growth in the region. These are:

1) Ensuring that growth is inclusive, with opportunities for employment and progression available for all. There are gaps in educational and training provision compared with future business needs, and the jobs market does not always work well for all residents.

2) Creating the right environment for businesses to grow and for residents to progress their careers; there are strong industries in the region but more could be done to support firms to improve their performance, including through the adoption of new technology and improved management practices.

3) Fostering innovative businesses from research through to commercialisation and encouraging the diffusion of that innovation across different sectors. The region can build on strong research facilities and innovative businesses to encourage future growth.

4) Investing in the right infrastructure and housing for future growth. Transport and digital connections within the region and to other economic centres must flow freely, and we must maintain our attractiveness as a place to live.

Across all of these, we will have to reduce the region's greenhouse gas emissions.

Questions to consider

Based on the current available evidence and the overarching objectives of the West of England Local Industrial Strategy we would welcome views on the following questions:

1) How significant are the four issues outlined above to you, your business or organisation? Will addressing them help the West of England to achieve the following objectives? –
    a) Delivering long-term growth that is inclusive and clean
    b) Accelerating economic growth by strengthening productivity to ensure that the region creates high quality, well-paid jobs for our residents.

2) Are there any other topics, or additional relevant sources of information, that you think we should consider as part of our evidence base? Please provide further details and suggest where we should be refining our analysis. Please also tell us of any recent and relevant data or analysis that you think we should consider. Please note we can only reflect data from recognised sources which is replicable.

3) What activities/ interventions do you know of either within the region or elsewhere that are addressing these issues?

A form for submitting responses to these questions can be found on the WECA website at:

www.westofengland-ca.gov.uk/ourstrategy/

Progress update

Sept 2018:	Local Industrial Strategy launch in Keynsham
Oct 2018 – Feb 2019:	Research on foundations of productivity and Grand Challenges
Feb 2019:	Release of initial evidence base for discussion
Mar – Apr 2019:	Strategy development in partnership with key stakeholders and local authority partners
Summer 2019:	Finalisation of West of England Local Industrial Strategy

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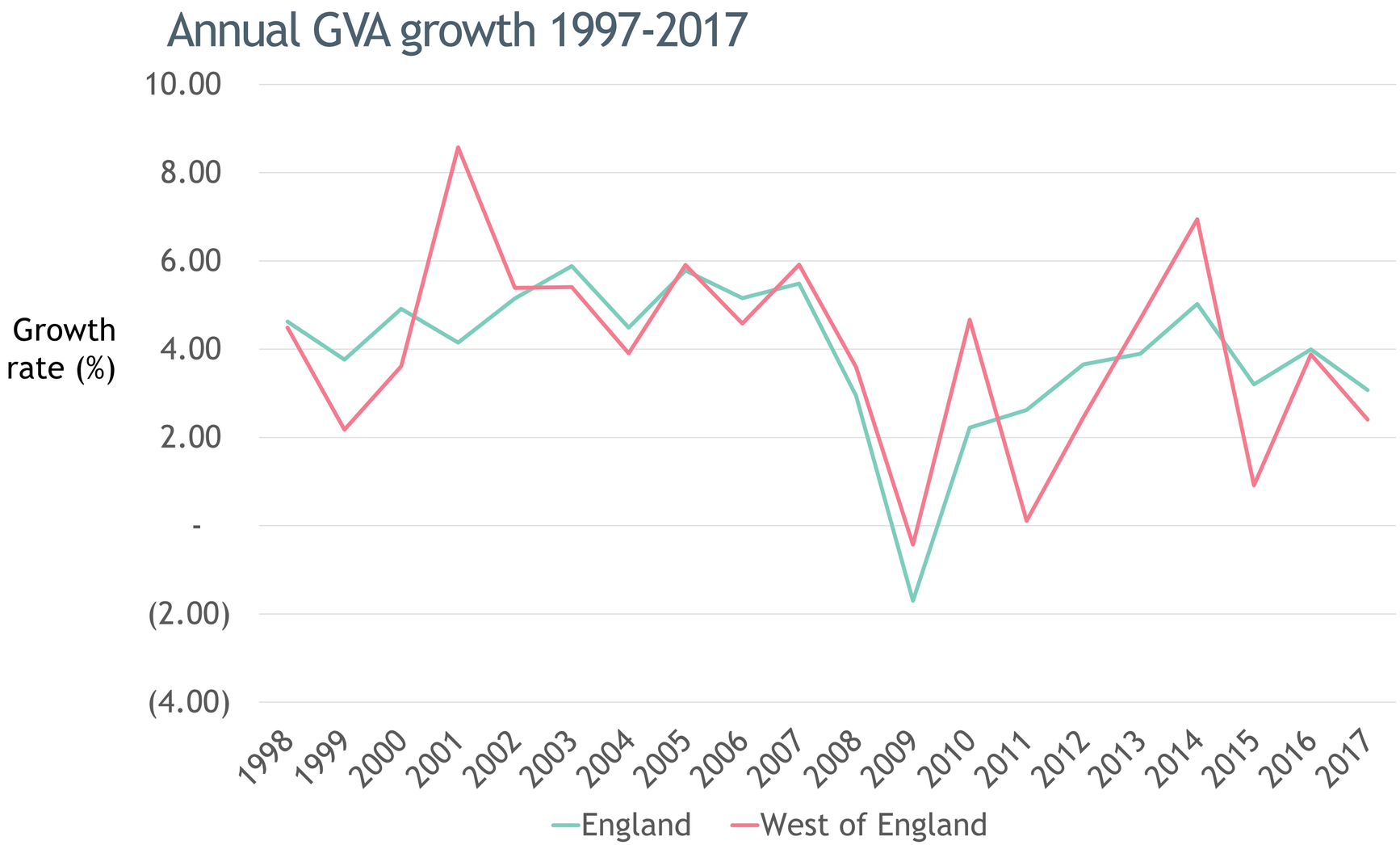
CLEAN AND INCLUSIVE GROWTH IN THE WEST OF ENGLAND

Productivity growth: summary

Productivity in the region is above average, but we cannot be complacent:

- Growth has slowed relative to elsewhere
- Not all residents have shared in recent success, and costs are rising
- We have grown our economy whilst reducing greenhouse gas emission, but there is more to do

Productivity is above the national average, but economic growth has slowed since the recession



£33.10 WofE ave.

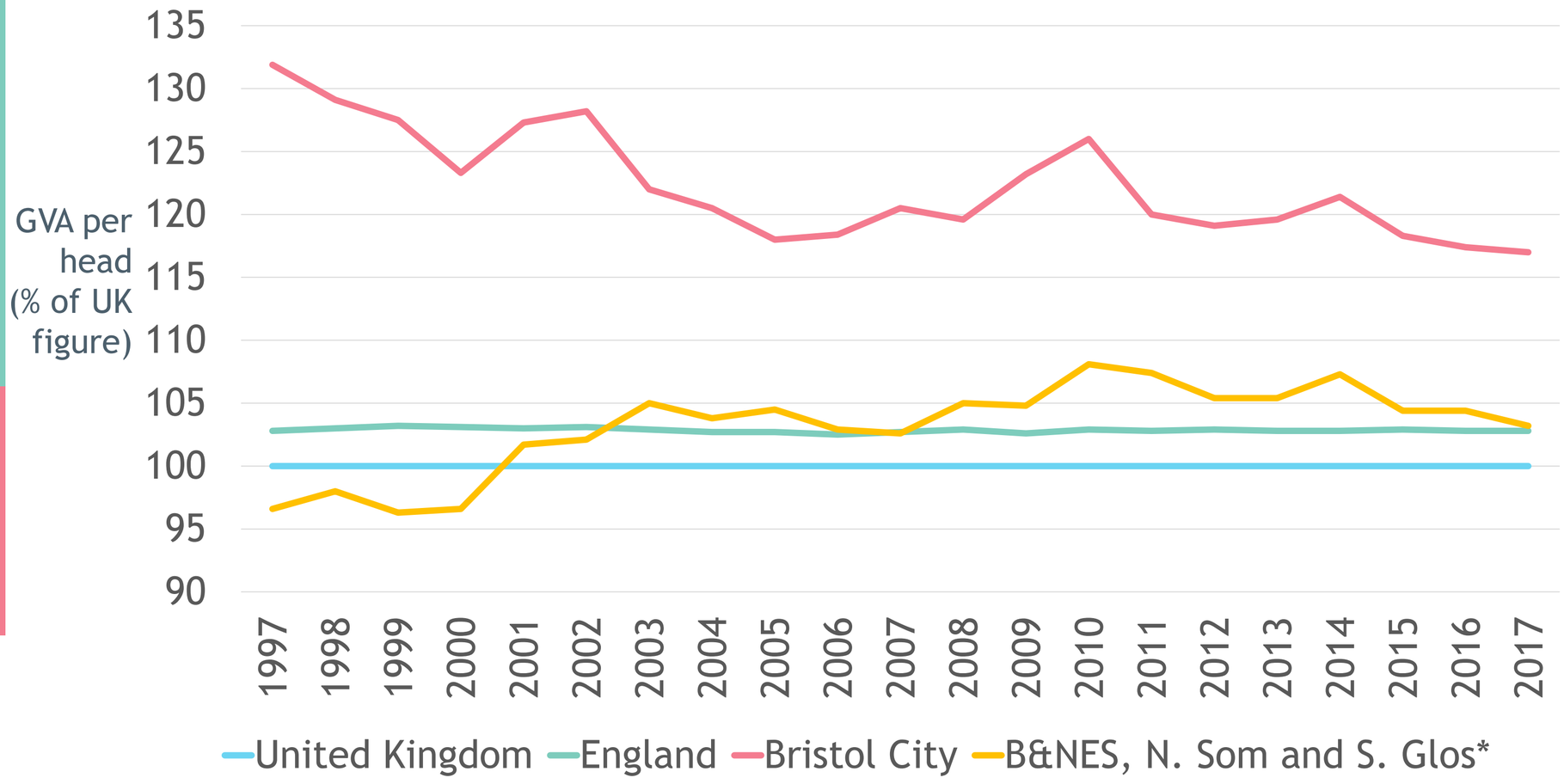
£32.80 UK ave.

Productivity (2016): GVA per hour worked

Source: Regional gross value added (income approach); Nominal (smoothed) GVA per hour worked, ONS

Our productivity premium has declined

GVA per head in the region has converged towards the national average since 2010, and for longer in Bristol. London, in particular, has pulled ahead of other regions.



GVA per head (2015):

£24,746
Bath & North East Somerset

£30,850
Bristol

£22,263
North Somerset

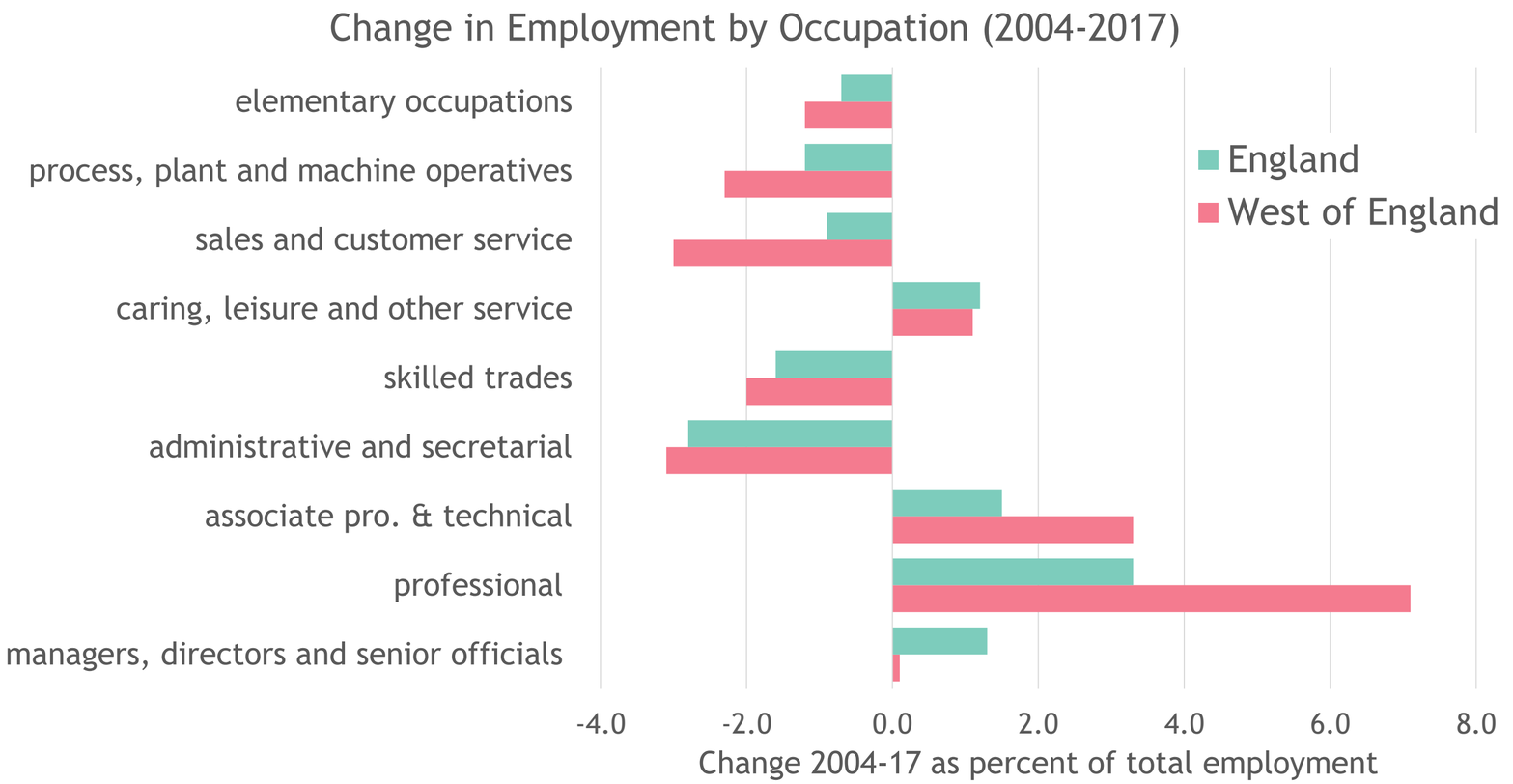
£31,581
South Gloucestershire

Source: Regional gross value added (income approach), ONS

* B&NES, N. Somerset and S. Gloucestershire are grouped together by ONS in these data

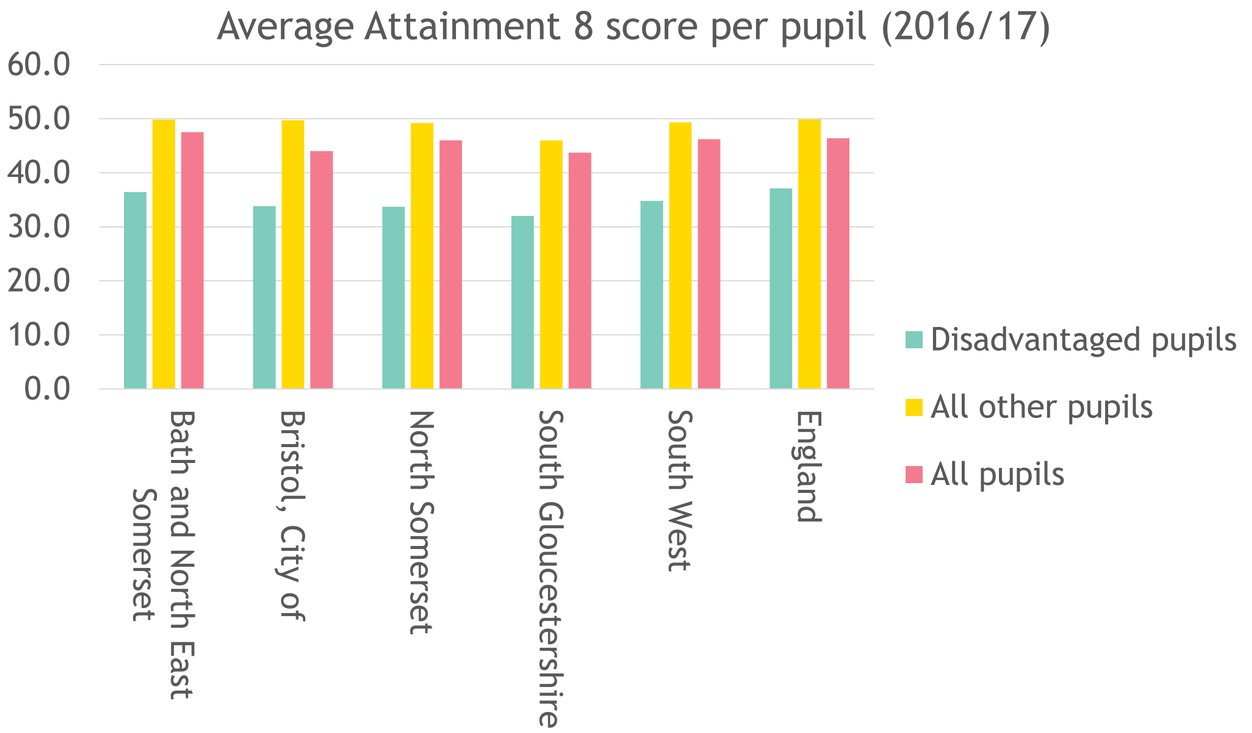
Inclusive growth: ensuring that all residents benefit from economic growth

- The job market is shifting towards high-skilled jobs and provision is not keeping up in all areas
- Housing prices have reached 9.3x average annual pay



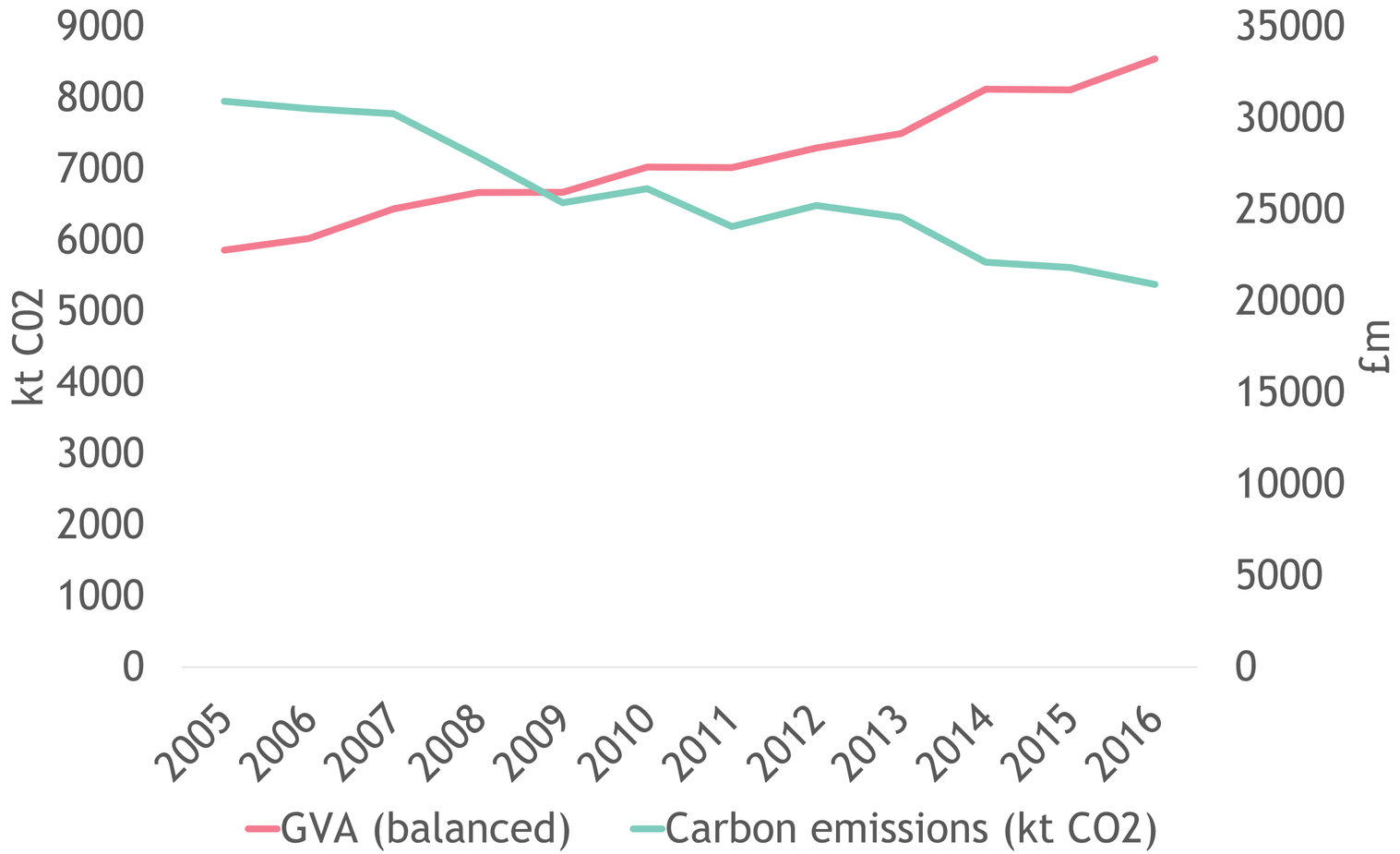
Inclusive growth: a bigger attainment gap for disadvantaged pupils here than across England

- The average difference between disadvantaged pupils and all other pupils across England was 12.8 points. The gap is wider in the West of England
- 16-17 year olds are more likely than nationally to not be in education, employment or training (+0.8 points)



Clean growth: the region has grown the economy while reducing carbon emissions, but there is more to do to achieve ambitions

West of England economic growth and carbon emissions



Reduction in emissions 2005-16:

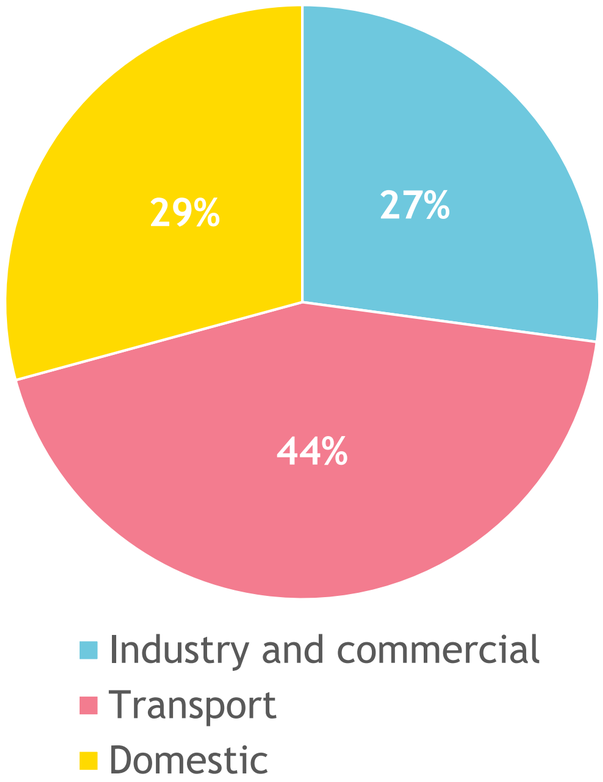
32.4%
West of England

31.6%
UK

Source: BEIS 2018, UK local authority emissions

Clean growth: business and transport have significant emissions; the region helps develop innovative solutions

West of England CO2 emissions 2016



Innovative clean growth initiatives in the region, including:

- Green finance – Triodos Bank UK head office
- High value design – Leonardo helicopter blades, Airbus wings of the future, NCC light weight materials
- University spin outs – Robial ‘pee power’
- R&D – UoB battery storage and nuclear, UoBath smart tech and Institute for Advanced Automotive Propulsion Systems
- High tech cluster – creates the platform for smart energy tech

Source: BEIS 2018, UK local authority emissions

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FOUNDATIONS OF PRODUCTIVITY:

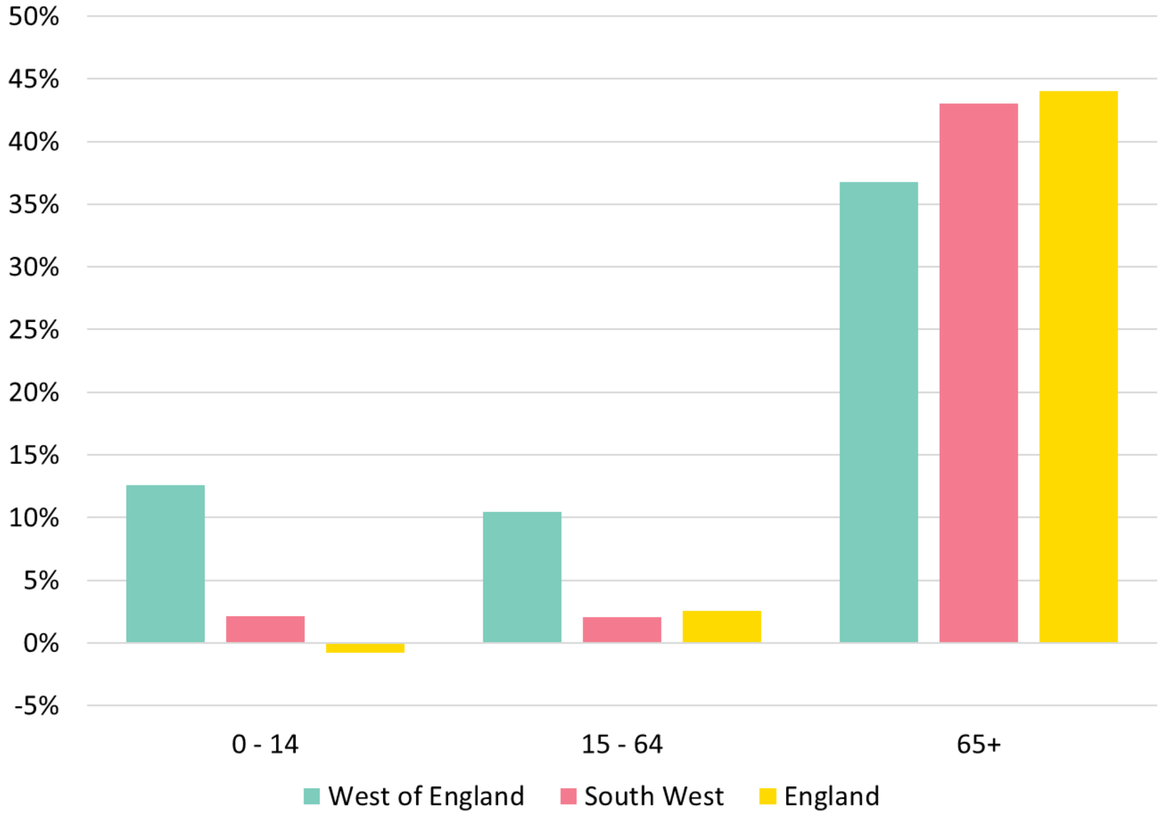
PEOPLE AND SKILLS

People & skills: summary

- A growing population; unlike other places that includes growth in working-age cohorts
- 37% growth expected in over-65 population by 2038
- Net inward migration has declined, although this is in line with national trends
- Employment is higher (+3.7 points), and unemployment lower (-1.0 point), than national average – but significant local variations
- 16-17 year olds are more likely than nationally to not be in education, employment or training (+0.8 points)
- High level of skills overall, but again, significant local gaps and mismatches with recruiter needs
- Significant growth in high-skilled jobs and decline in low skilled ones: helps lift incomes, but presents a risk of weakening the ladder to prosperity for some residents

A growing population – including at working age

Increase in population of broad age groups, 2018 - 2038



Source: PWC analysis, ONS Population projections

+190,000
West of England population growth by 2038

+3,550
Net migration from elsewhere in UK in 2017

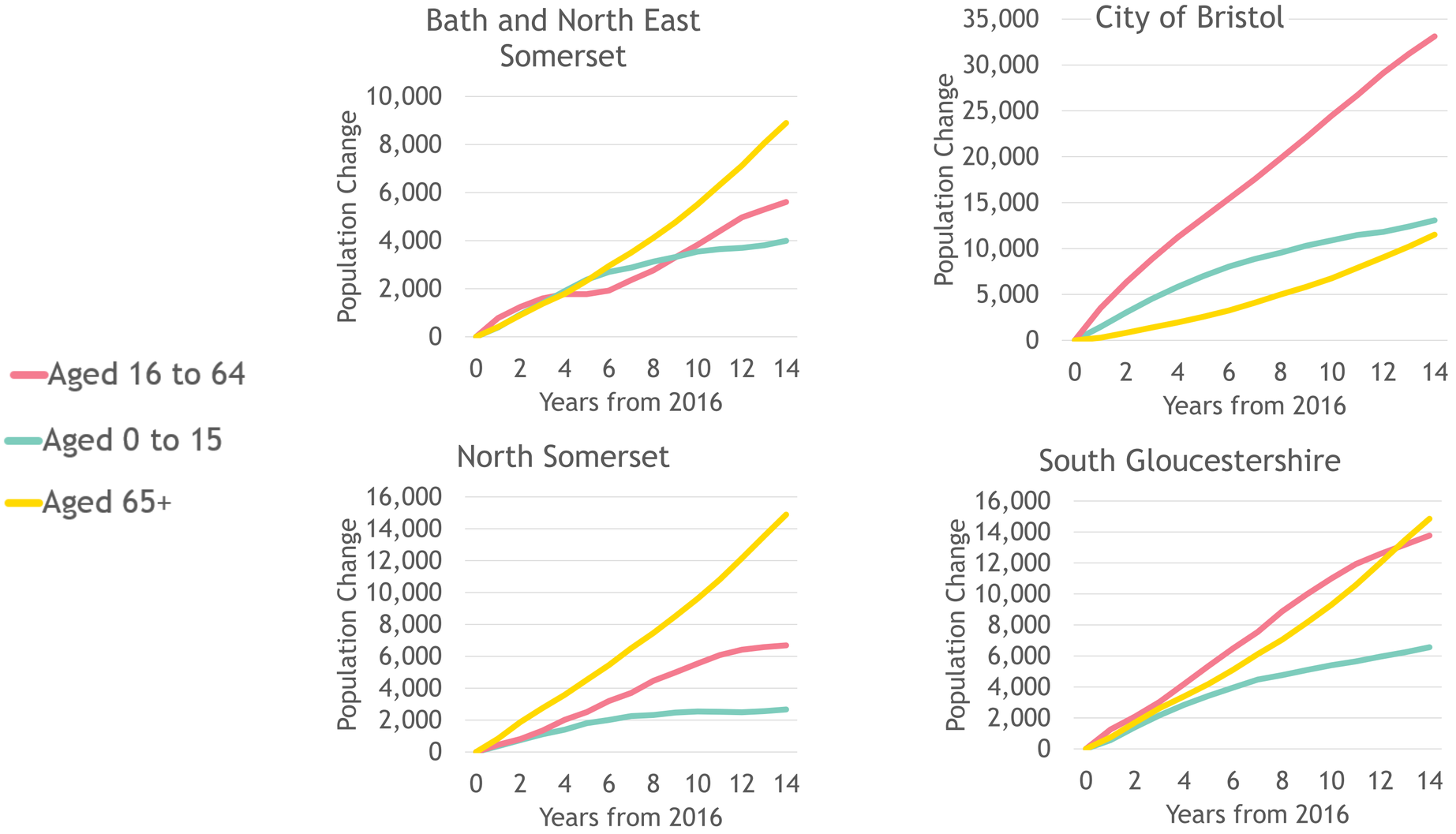
40%
of inward migrants in 2017 aged 15-24

Rising dependency ratio

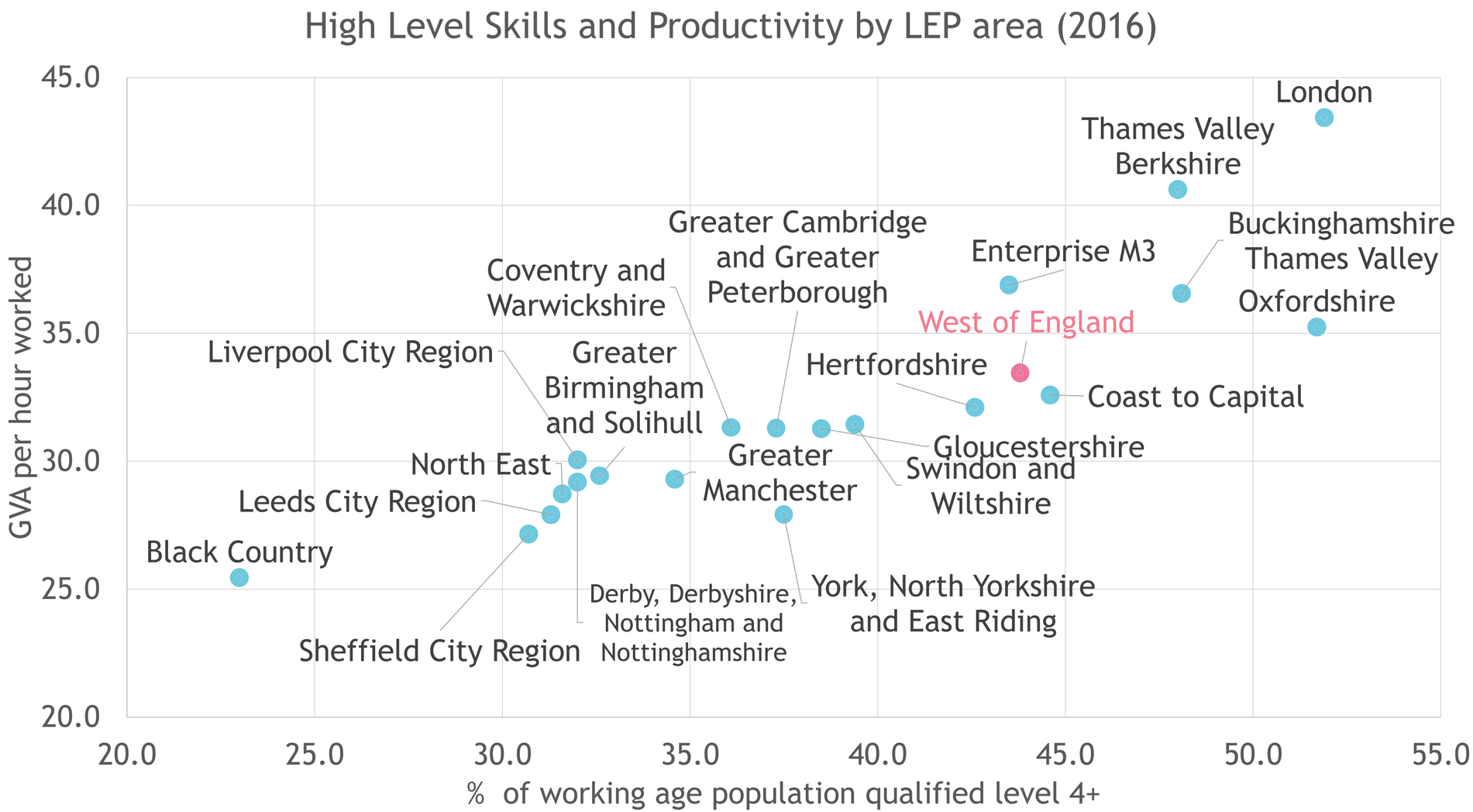
in 2018 **0.54** → **0.60** 2038

The West of England Local Industrial Strategy has looked at the ONS 2016 Population Projections, as the most recently available projections, in this analysis. These projections have been used to draw out high-level trends in population change and highlight any areas which may require a local policy response. Note these are different to the population projections used to inform the Strategic Housing Market Assessment and Joint Spatial Plan, which draw on the 2014 Population Projection were based on 10-year migration trends produced by Opinion Research Services

Significant growth in older population, particularly in B&NES and N. Somerset

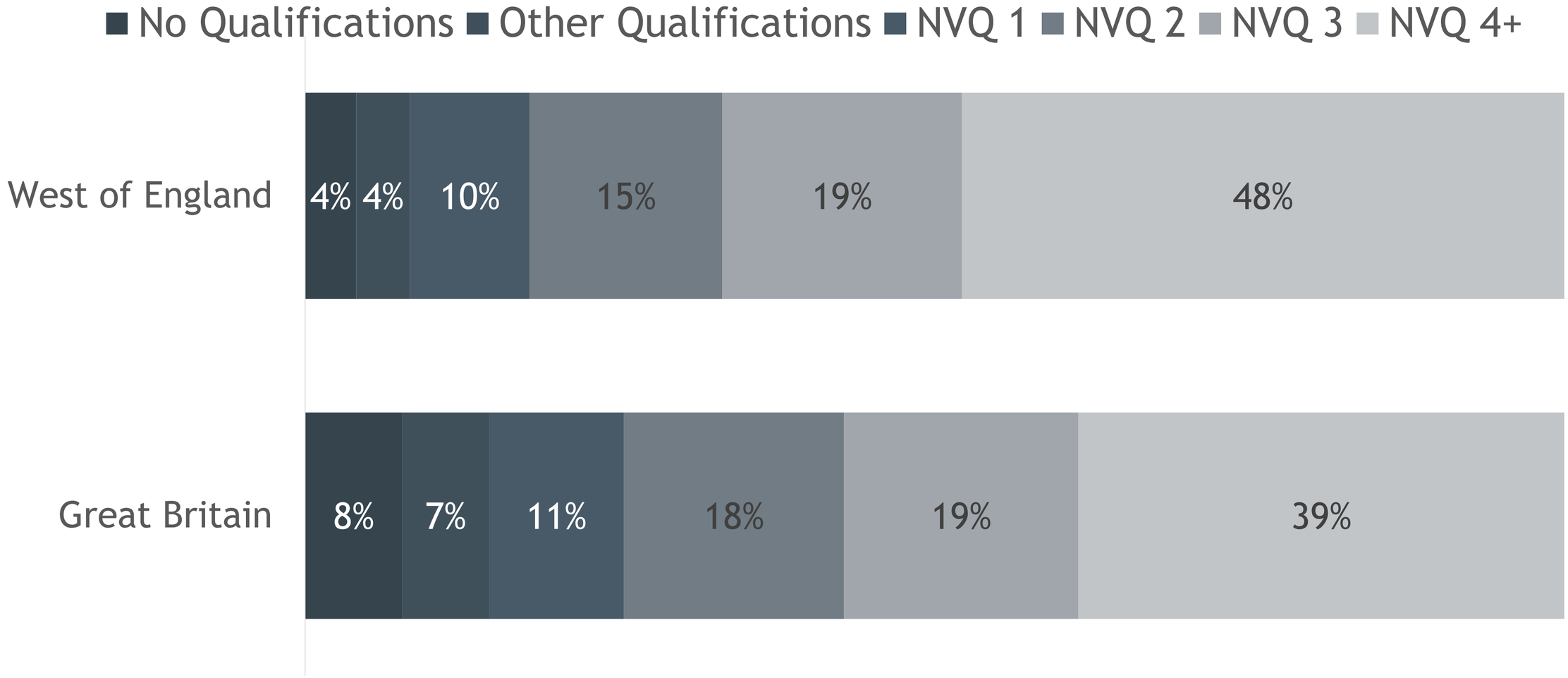


Areas that perform strongly on skills tend to perform strongly on productivity



We have a predominately highly skilled workforce

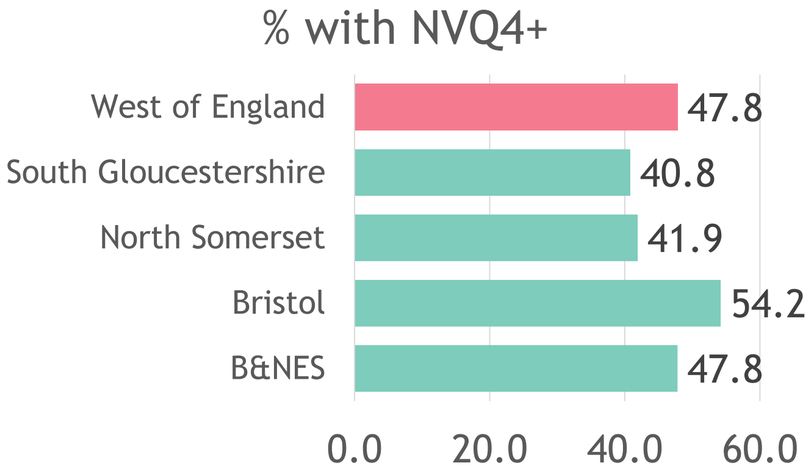
Qualifications of working age population, 2017

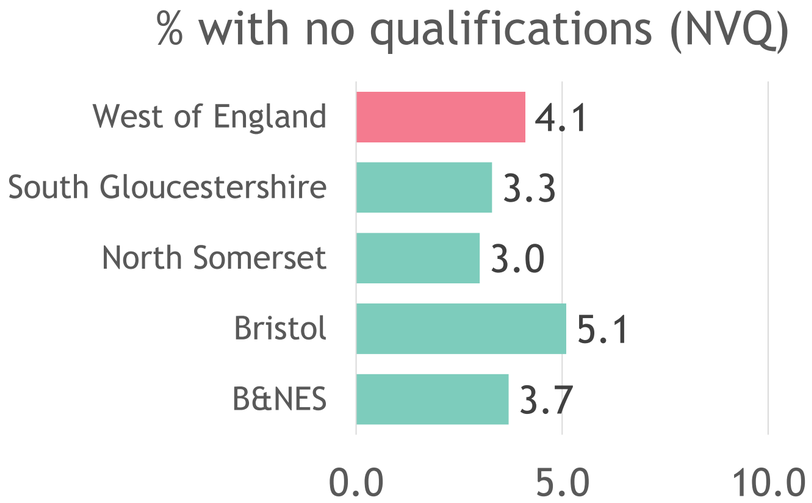


Source: ONS Annual population survey

But there are disparities between the authorities

Attainment within working age population

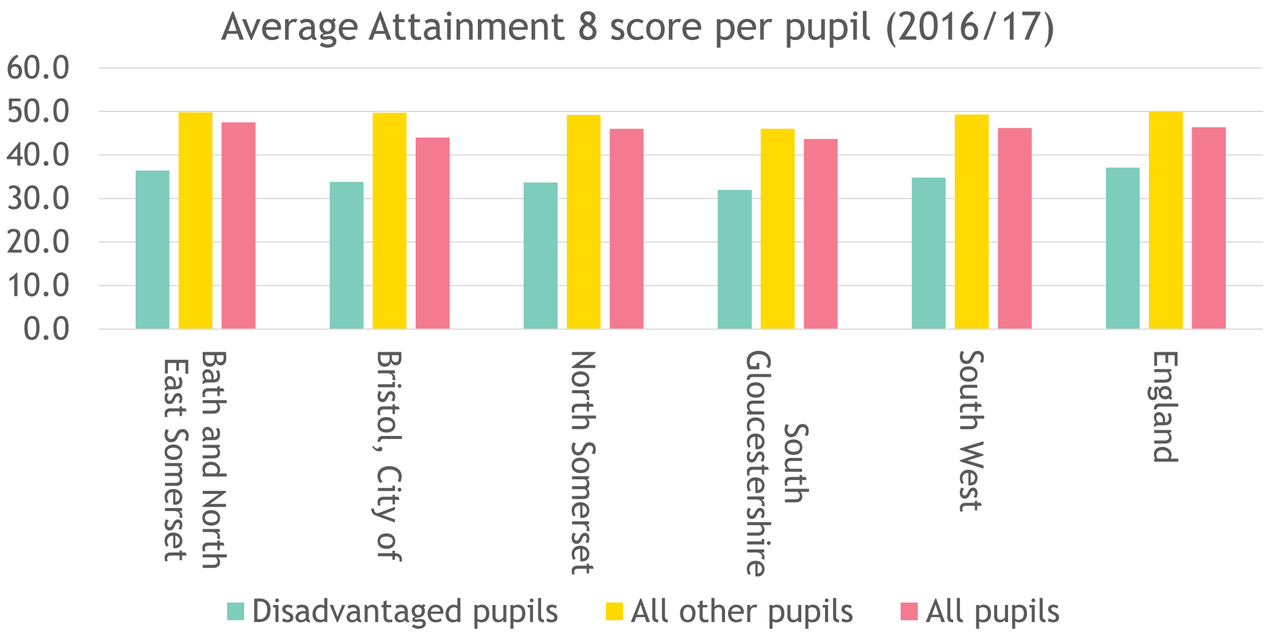




- Education attainment varies: 54.2% having an NVQ4+ in Bristol compared to 40.8% in South Gloucestershire
- Bristol has the highest proportion of working age population with no qualifications in the region (5.1%) – perhaps to be expected in a city, but an indication of inequality

Source: Annual Population Survey Jan-Dec 2017, ONS

With clear gaps in educational attainment: disadvantaged pupils obtain worse results than nationally



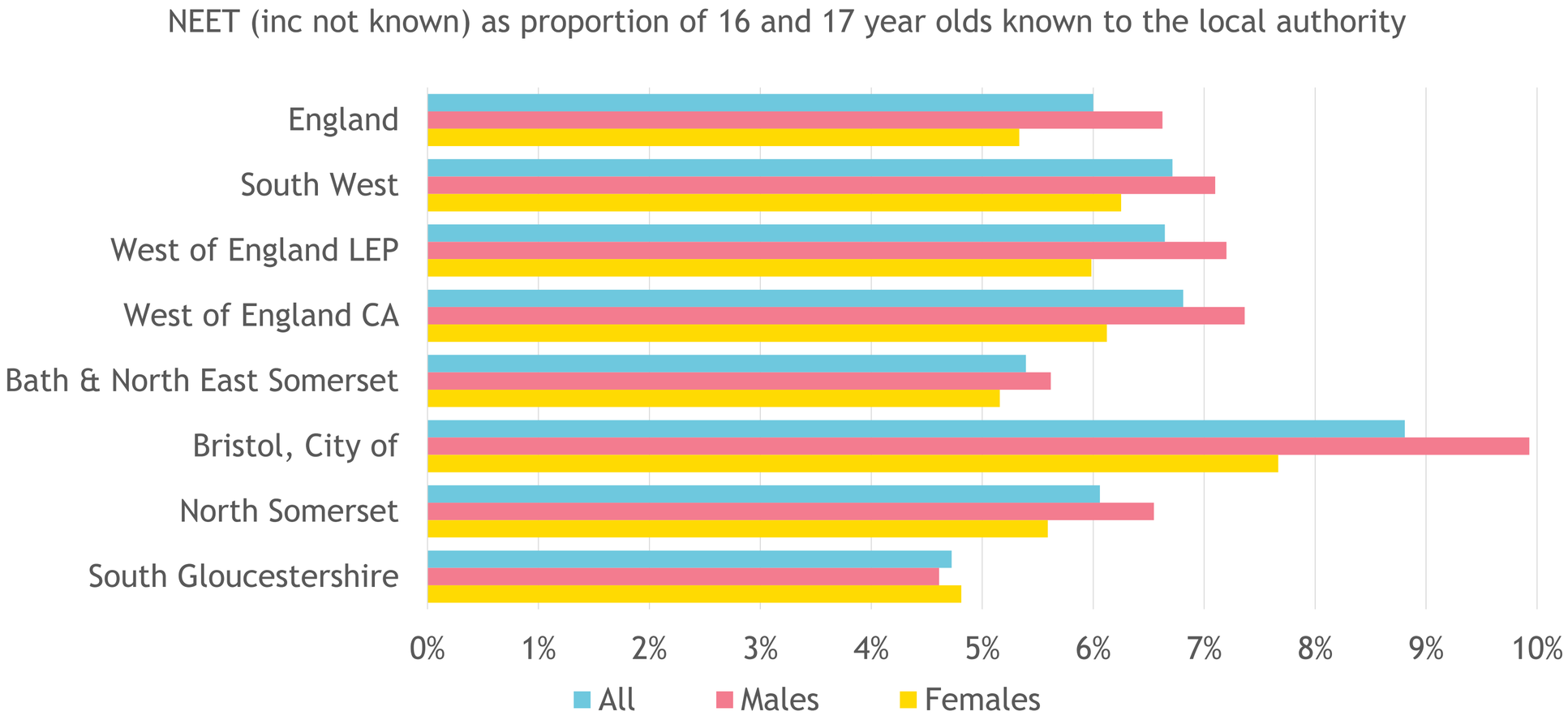
Source: DfE

Across all geographical areas looked at, disadvantaged pupils have a lower average attainment 8 score than all other pupils.

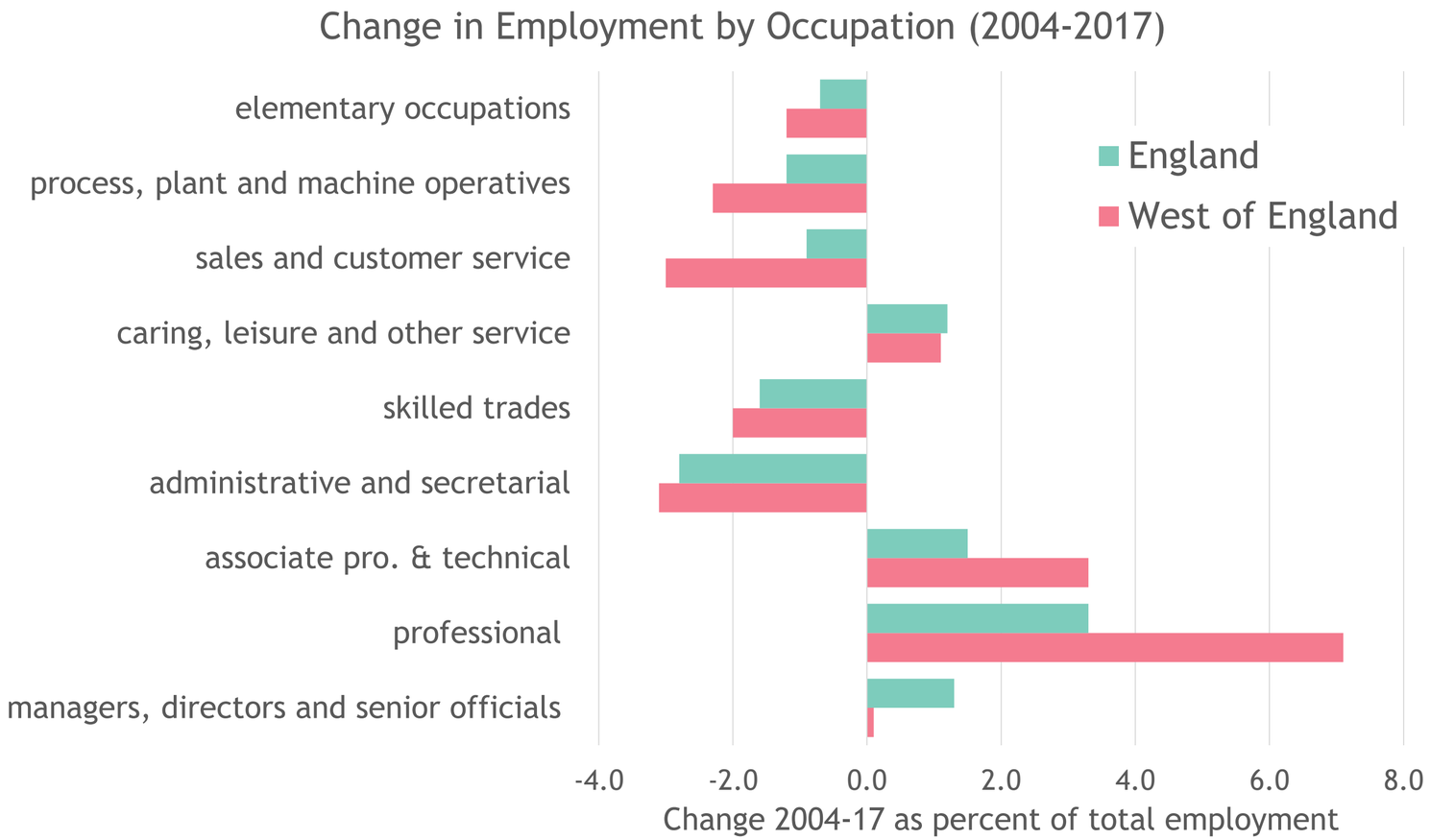
The average difference between disadvantaged pupils and all other pupils across England was 12.8 points. All four of the West of England authorities have a larger points difference – B&NES 13.4; Bristol 15.9; North Somerset 15.5; and South Gloucestershire 14.0

Only B&NES has an Average Attainment 8 score for all pupils higher than that for England.

With a higher proportion of NEETs



Those with low or no formal qualifications can be further disadvantaged by recent changes in employment patterns



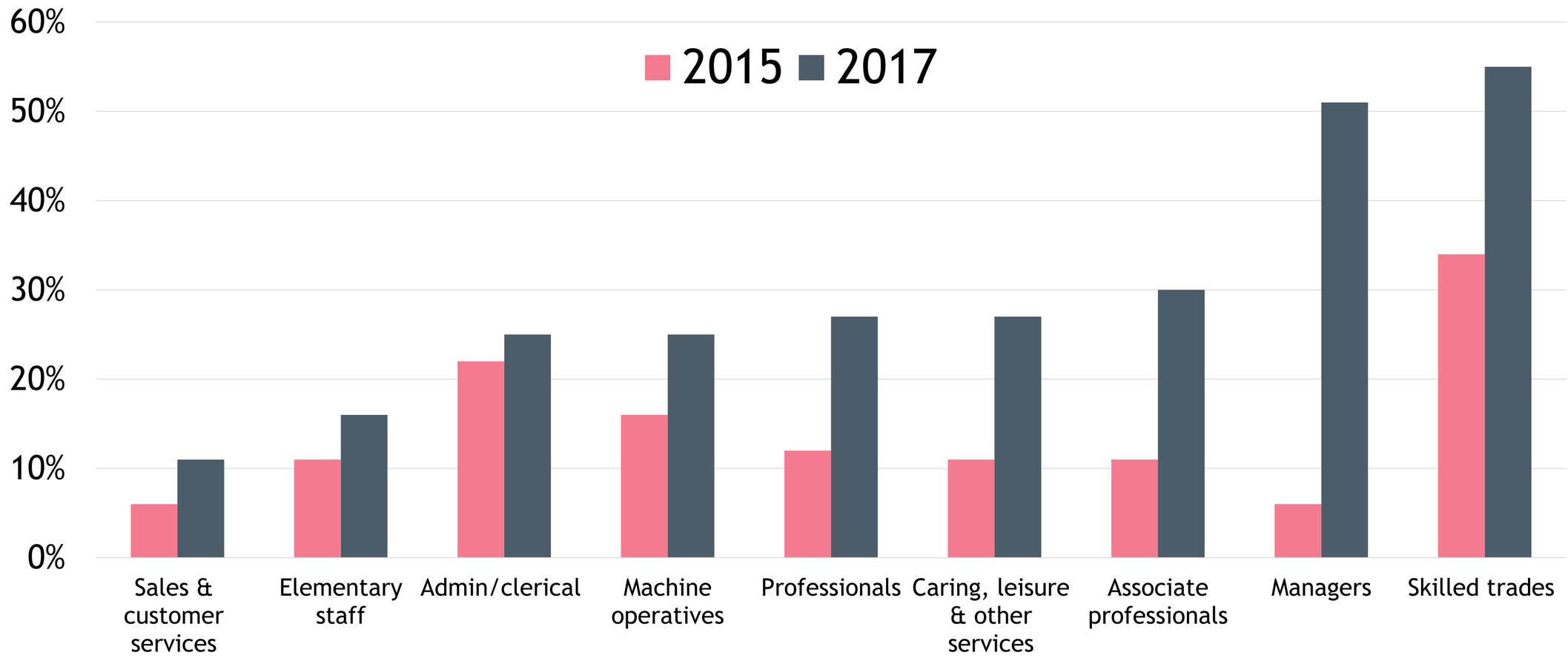
- In the regional and nationally, strong growth in higher skilled occupations and a decline in lower skilled occupations.
- The West of England has seen a more significant decline in the sales and customer service occupations; and process, plant and machine operatives than nationally.

Higher proportion of people employed in professional and technical occupations than the national average

Source: ONS annual population survey

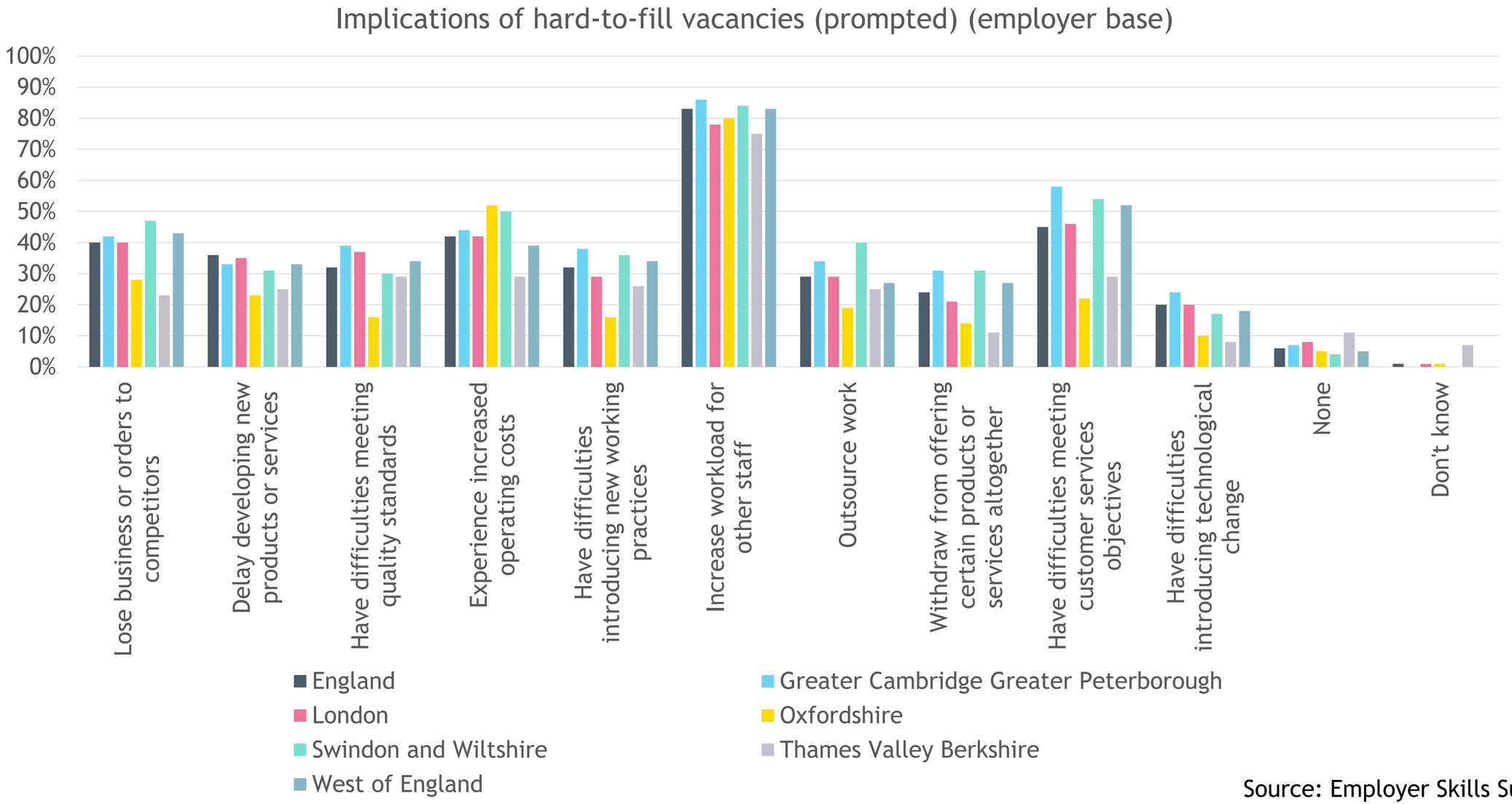
Skills shortages have increased significantly

Skills shortage vacancy density by occupation, WofE 2015-17



Source: Employer Skills Survey 2017; Centre for Progressive Policy analysis

Skill shortages have a negative impact on business performance



Source: Employer Skills Survey 2017

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FOUNDATIONS OF PRODUCTIVITY:

INNOVATION

Innovation: summary

The region has strong foundations for creating innovation:

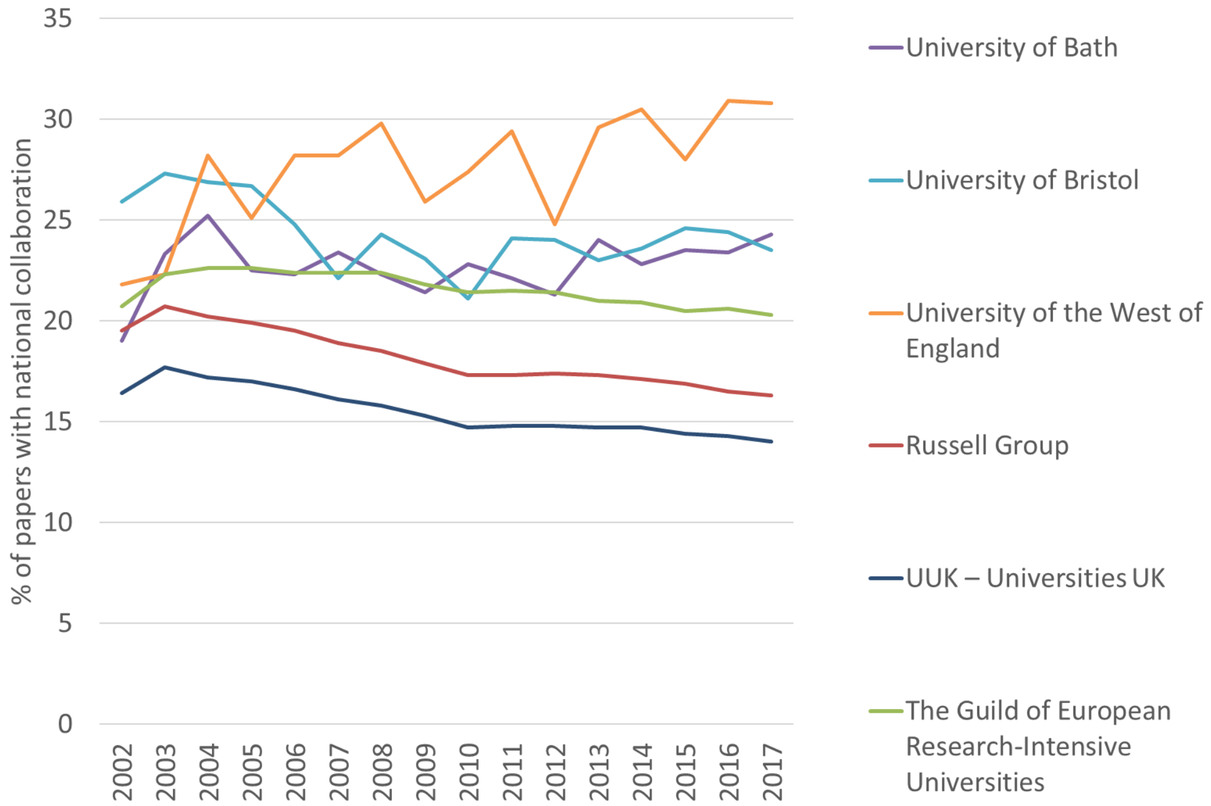
- A strong research base: universities in the region collaborate more than others, nationally and internationally
- Universities in the West of England have strong working relationships with business, and growing spin-out success
- R&D spending by businesses is average, although the number of research staff is relatively high
- Patent filing is high, partly driven by prominent large businesses, but also with a large number of individual inventors
- Collaboration networks have been key in stimulating innovation across a diverse range of sectors

Ensuring that modern technology and methods are applied by all businesses across the region will be key.

Regional universities collaborate more than average, particularly with institutions to the east

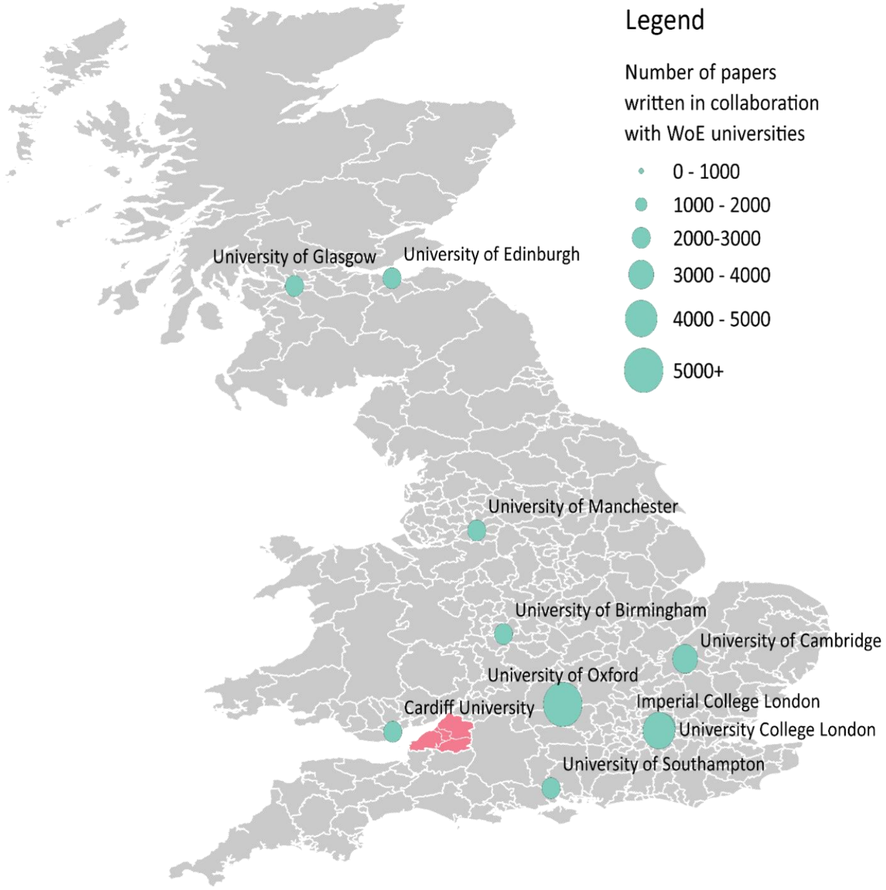
Proportion of scholarly outputs produced with national collaboration

- The UK average rate of national collaboration from 2002 to 2017 sits around 15.5%, while Bristol, Bath and UWE had an average rate of around 24.8%.



Source: PwC analysis, Elsevier Scopus
Bath Spa omitted because of high data variability

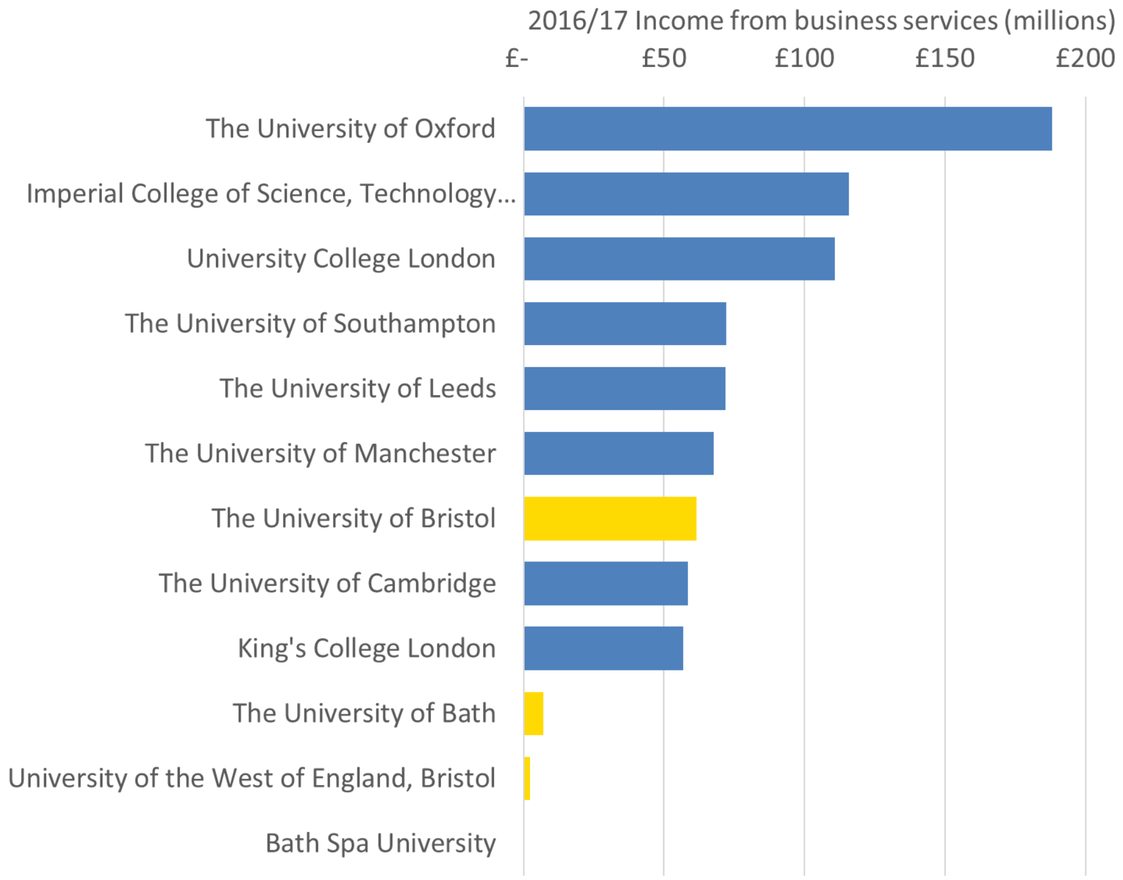
Location of top-10 collaborating institutions for the WoE universities (2010-2018)



And universities have strong working relationships with business

The University of Bristol ranks seventh in the UK, ahead of Cambridge, on their level of income from business services

2016/17 Income from business services (£m)



Source: PwC analysis, HESA

Spin-offs 2014/15-2016/17:

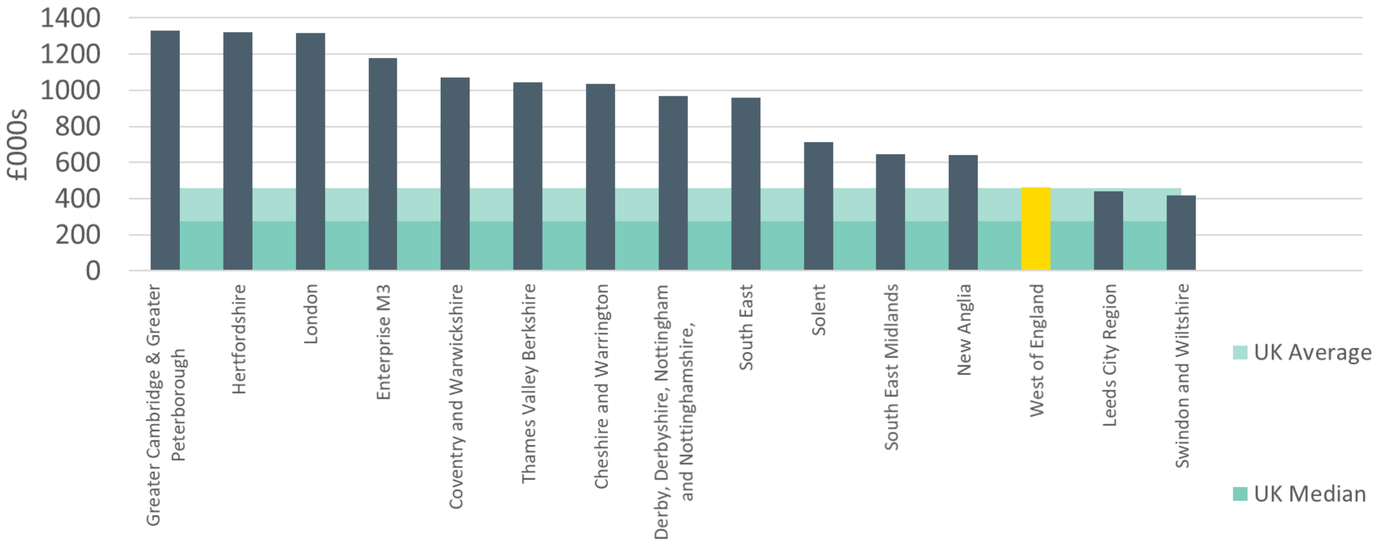
- Bath is in the top 10 universities for spin-off turnover
- Bristol and Bath are both in the top 20 for external investment

Rank	Estimated current turnover of all active firms (£m)	Institution
1	209	The Queen's University of Belfast
2	184	The University of Strathclyde
3	181	The University of Edinburgh
4	147	The University of Glasgow
5	144	The University of Oxford
9	81	The University of Bath
16	43	University of the West of England, Bristol
36	21	The University of Bristol
-	-	Bath Spa University

Rank	Estimated external investment received (£m)	Institution
1	618	The University of Northampton
2	253	The University of Oxford
3	214	Imperial College of Science, Technology and Medicine
4	100	The University of Edinburgh
5	92	The University of Glasgow
14	21	The University of Bristol
18	14	The University of Bath
22	11	University of the West of England, Bristol
-	-	Bath Spa University

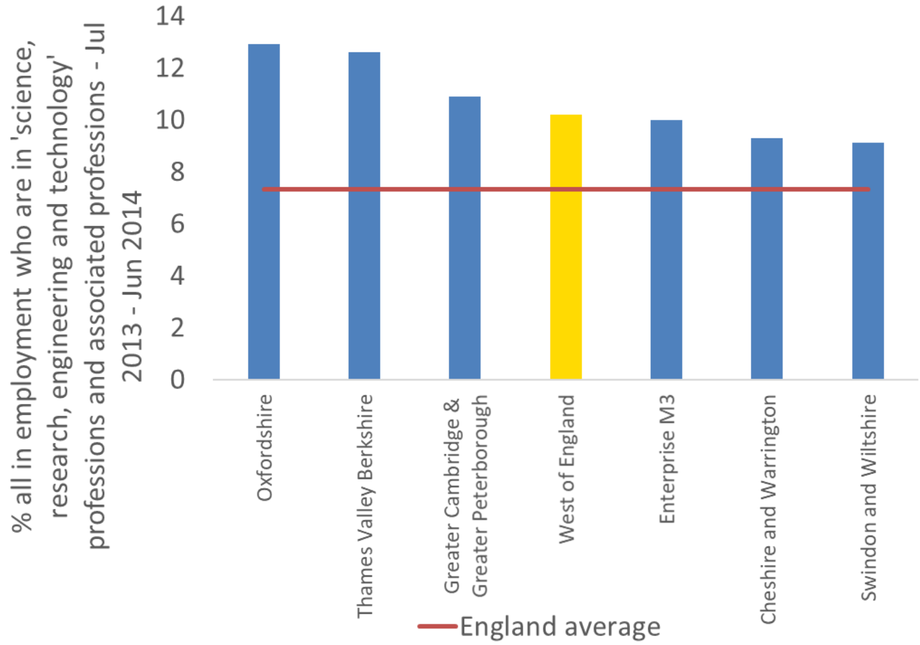
R&D spending by business is average, though R&D employment is high

2013 Business Spending on R&D, by LEP



Source: PwC analysis, BIS 2015, Mapping Local Comparative Advantages in Innovation

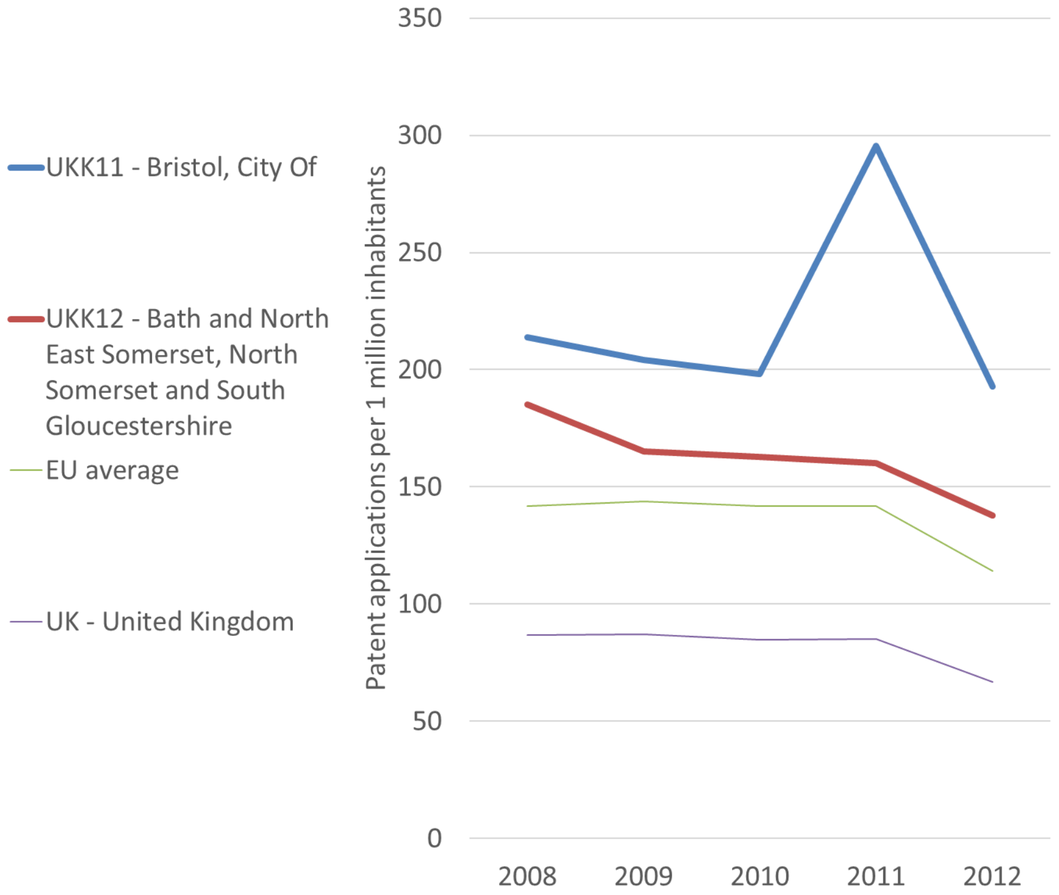
R&D employment by LEP



Source: PwC analysis, BIS 2015, Mapping Local Comparative Advantages in Innovation

This seems to feed high levels of patent filing, with a large number of inventors and leading firms

Patent applications per million residents



Source: PwC analysis, Eurostat

West of England is in the top 3 LEP areas for patents in the categories:

- performing operations and transport (including aviation)
- fixed construction (including civil engineering)

The West of England supports the seventh highest number of inventors of all LEPs.

Rolls-Royce, BAE and Airbus are consistently in the top 20 firms registering patents nationally, though of course some of this research will be outside the West of England.

Highly innovative businesses value the region's systems of collaboration and cross-sector working

Research among 16 examples of highly innovative and fast-growing sectors in the region identified a number of common themes that have supported growth in the past, and where future success may be constrained:

Enablers of growth	Constraints on future growth
Sector-specific research and development facilities	Shortage of affordable workspace, particularly for start-ups and scaling businesses, and of specialised facilities (eg science or food)
Support environment including incubators and coordination of programmes for funding	Shortages of skills or inadequate pipelines for significant growth
Networking to build innovation or sector strategy	Lack of strategic approach and profile within sectors holding back funding or investment; lack of coordination of investment
Clustering around large 'anchor' businesses	Lack of scale or key anchor tenants, leading to a lack of critical mass
Large talent pools	Challenging access to investment and funding and perceived under-investment in some sectors
Attractive quality of life helping to retain staff	Lack of specialised business support tailored to specific sectors
Local capability in diverse sectors	Risk that affordability and quality of life undermines staff retention
Market building support to address barriers to entry	

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FOUNDATIONS OF PRODUCTIVITY:

INFRASTRUCTURE

Infrastructure: summary

- Extensive evidence on the region's transport infrastructure and built environment has been developed in the Joint Local Transport Plan and Joint Spatial Plan. The Local Industrial Strategy complements these plans.
- Infrastructure assets such as the port and airport provide strong international connectivity
- Economic growth has put our infrastructure under increasing pressure, and house prices have risen to 9.3 times average earnings

The port and airport provide important links for business to international partners

The most used routes by business passengers flying out of Bristol Airport, by volume

Route	Edinburgh (EDI)	Glasgow (GLA)	Amsterdam (AMS)	Dublin (DUB)	Paris Charles de Gaulle (CDG)	Belfast International (BFS)
Last 12 months Passenger numbers	392,000	305,300	423,200	419,100	150,500	253,100
Estimated business percent	23%	23%	25%	23%	30%	25%
Business passengers	90,160	70,219	105,800	96,393	45,150	63,275
Total for these routes	470,997					
Total for all routes 2017	8,239,250					

Source: Bristol Airport

Bristol Port:

Throughput of 12m tonnes per year of cargo including:

- 700,000 motor vehicles
- 1.1m tonnes of animal feed
- 27% of Heathrow's aviation fuel
- 3,000 containers a week

- 67% of port trade is with non-EU countries

Housing affordability has worsened

	Average House Prices (2017)	Median Annual Pay - Gross (2017)	Ratio	Median Annual Pay 10th percentile - Gross	Ratio
B&NES	326,799	29,722	11.0	15,685	20.8
Bristol	267,949	27,980	9.6	16,605	16.1
N.Somerset	249,744	30,514	8.2	15,626	16.0
S.Gloucestershire	264,805	30,236	8.8	17,500	15.1
West of England	272,632	29,299	9.3	16,557	16.5

Source: WECA Workings, House Price Index & ASHE, ONS

	Average House Prices (Dec 2011)	Average House Prices (Dec 2017)	% Increase
B&NES	223,481	329126	47
Bristol	163,898	275012	68
N.Somerset	170,644	252895	48
S.Gloucestershire	170,978	269376	58
West of England	175700	277,342	58

Source: WECA Workings, House Price Index & ASHE, ONS

- Average house prices in the West of England are 9.3 times average annual pay, compared with a ratio of 7.8 across England and Wales.
- This varies greatly across the region with average house price being 11 time annual resident earnings in B&NES; this extends to 20.8 times for the lowest 10% of earners.
- Since 2011 average house prices across the West of England have increased by 58%; with the largest increase in Bristol by 68%.
- Rental prices across the region have increased significantly as well.

Digital capacity and uptake needs improvement

- Usage: the proportion of internet users is consistently above the national average of 89.8%
  - 92.8% for Bristol
  - 93% for Bath and NE Somerset, N Somerset and S Gloucestershire together
- Nationally, 23% of SMEs do not have enough basic digital skills, and 50% do not have a website
- Provision: there is significant variability across local authorities in the availability of Ultrafast Broadband, but provision is growing fast
- Bristol has the strongest 4G connection within the West of England both inside (77.3% coverage) and outside (98.9% coverage) of buildings. Other local authorities in the region are lagging slightly behind in terms of 4G availability
- Inclusiveness implications:
  - Improved access or lower cost service provision
  - But potential for exclusion due to cost, lack of skills, or ‘not spots’

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FOUNDATIONS OF PRODUCTIVITY:

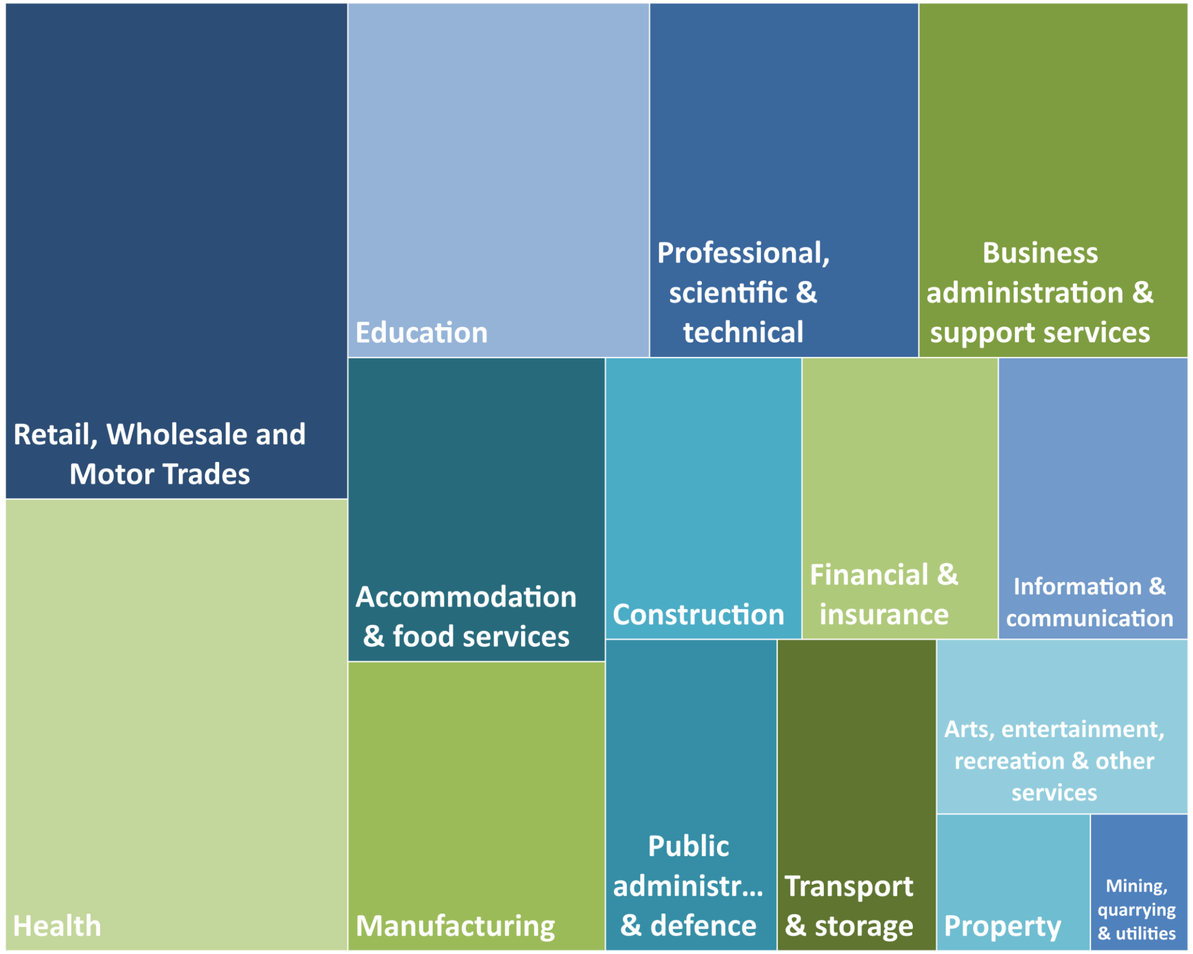
BUSINESS ENVIRONMENT

Business environment: summary

- The West of England is home to strong industries in aerospace and engineering, financial and professional services, and creative industries and digital services
- Employment in professional services and the public sector has grown in recent years
- The region trades less intensively than the national average, but runs a trade surplus, driven by strong services exports
- Business survival rates and scale-up success seem positive; however, business creations and closures are less dynamic than elsewhere

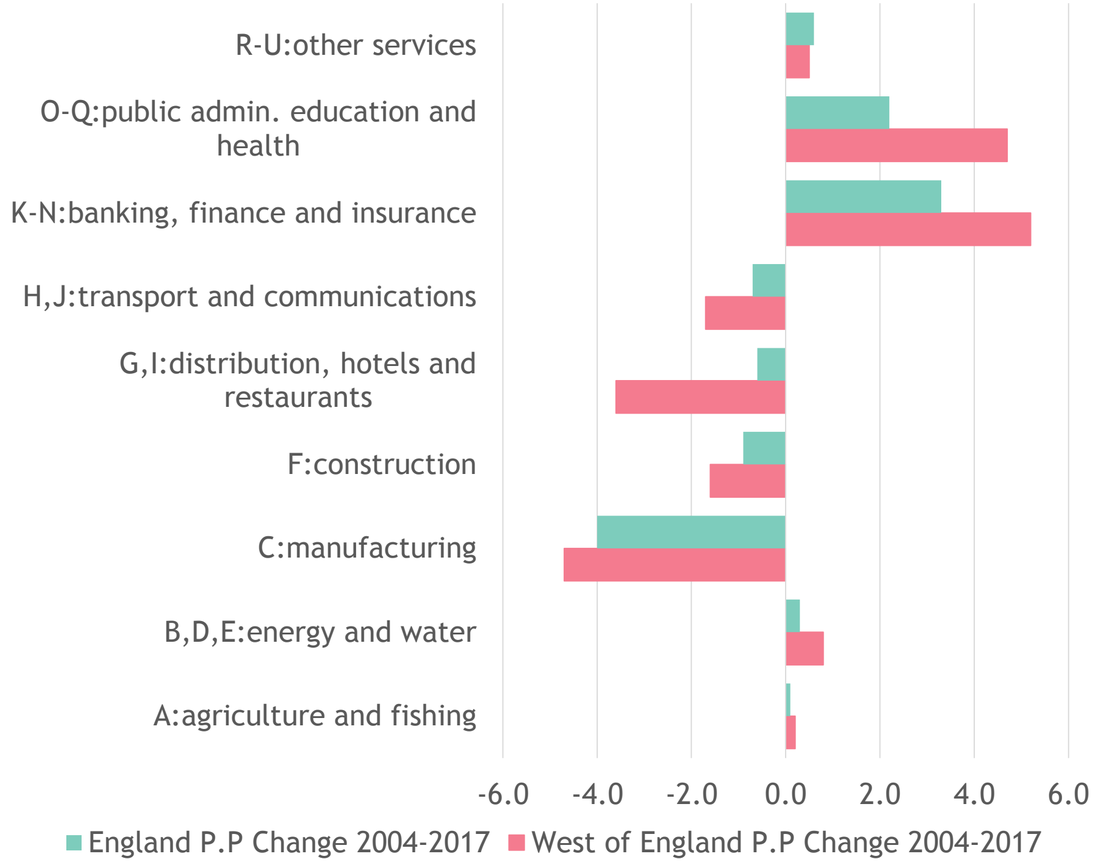
Financial services and the public sector have grown strongly in employment since 2014

Employment by industry (% of total), West of England



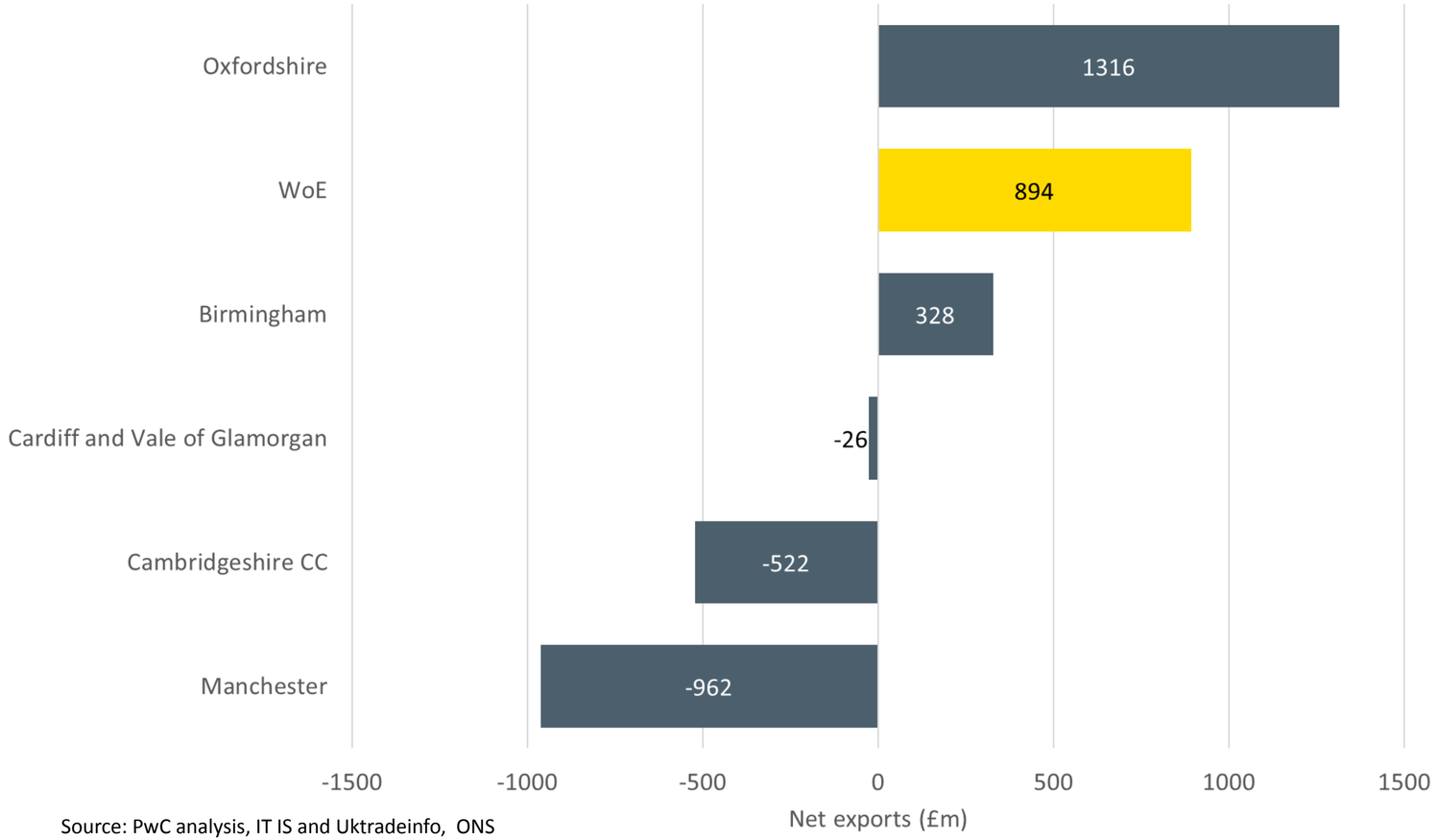
Source: ONS Business Register and Employment Survey

Percentage Point Change in Employment by Industry (2004-2017)



Trade intensity behind average, but exporting (particularly services) is strong

Net exports for the West of England and comparator areas for the trade of goods and services



Source: PwC analysis, IT IS and Uktradeinfo, ONS

-£445m goods

West of England trade deficit in goods (1.4% of GVA)

+£1,339 services

West of England trade surplus in services (4.1% of GVA)

20.7% of GVA

Value of total exports

- Lower than UK (24.9%)

£2.8bn

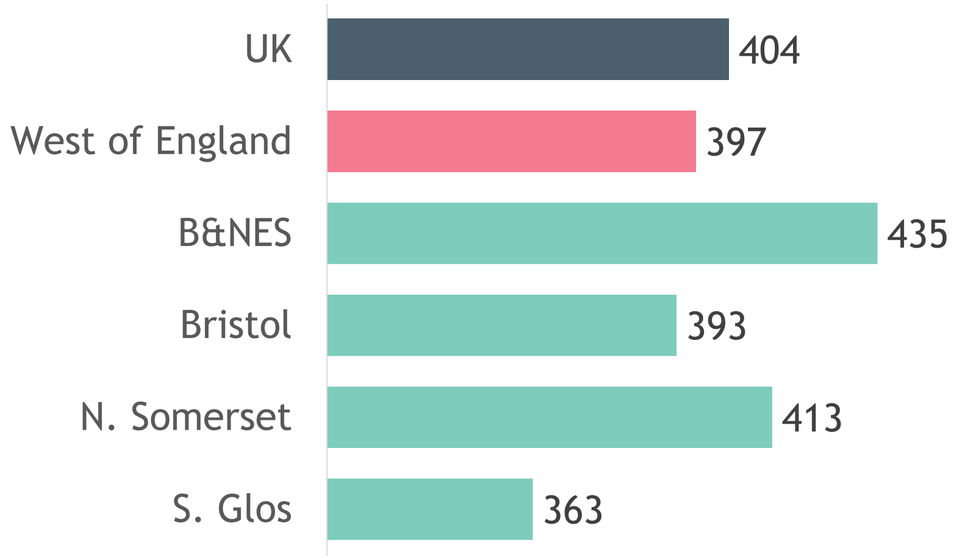
Value of WofE exports to EU

A lower level of business start-ups, but relatively good survival rates

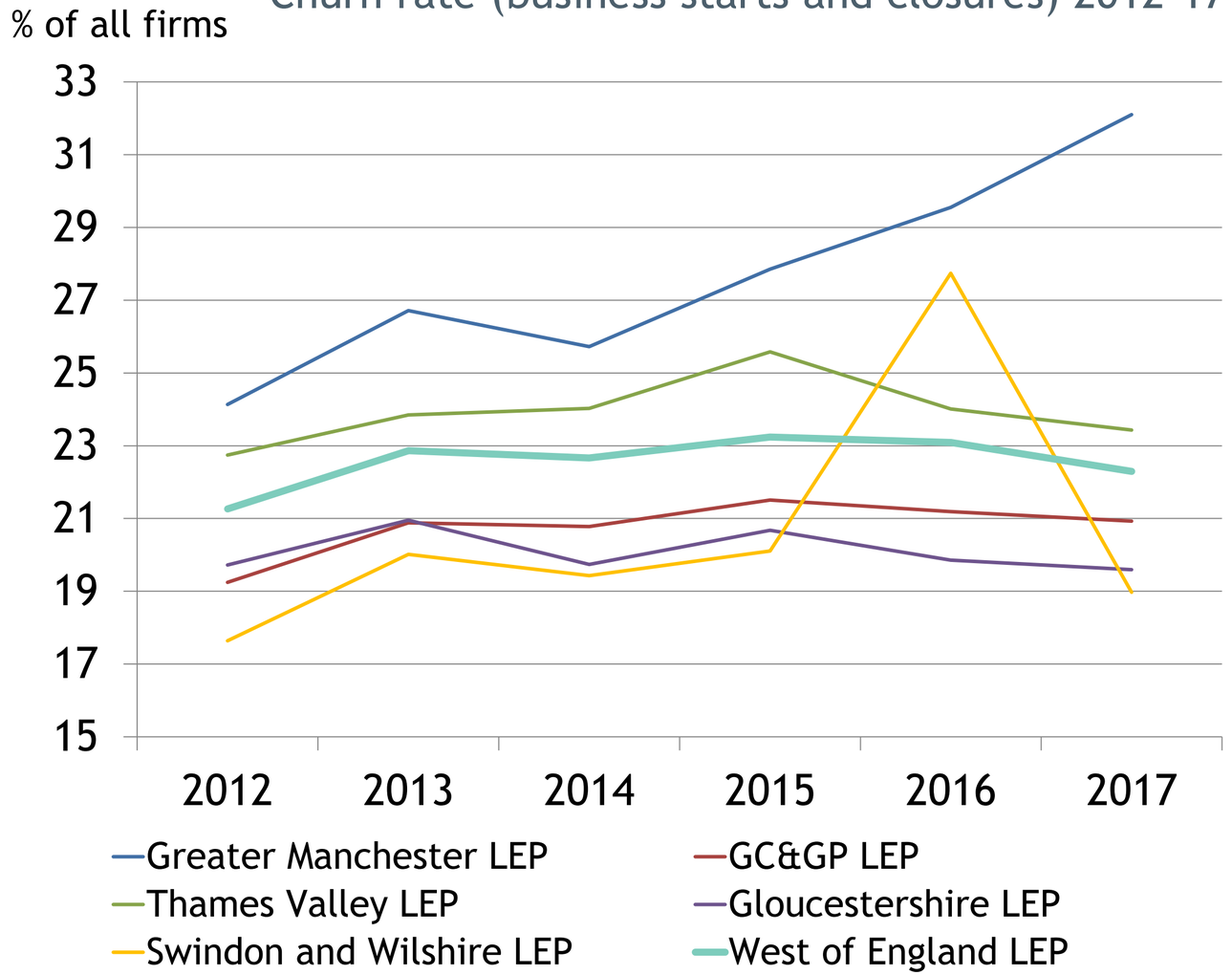
45,000
active businesses 2018

+27%
2010-2018

Number of active enterprises per 10,000 residents



Churn rate (business starts and closures) 2012-17



A high density of scale-up firms and successful support to grow

85% of scale-ups grew turnover

in the WofE in 2016

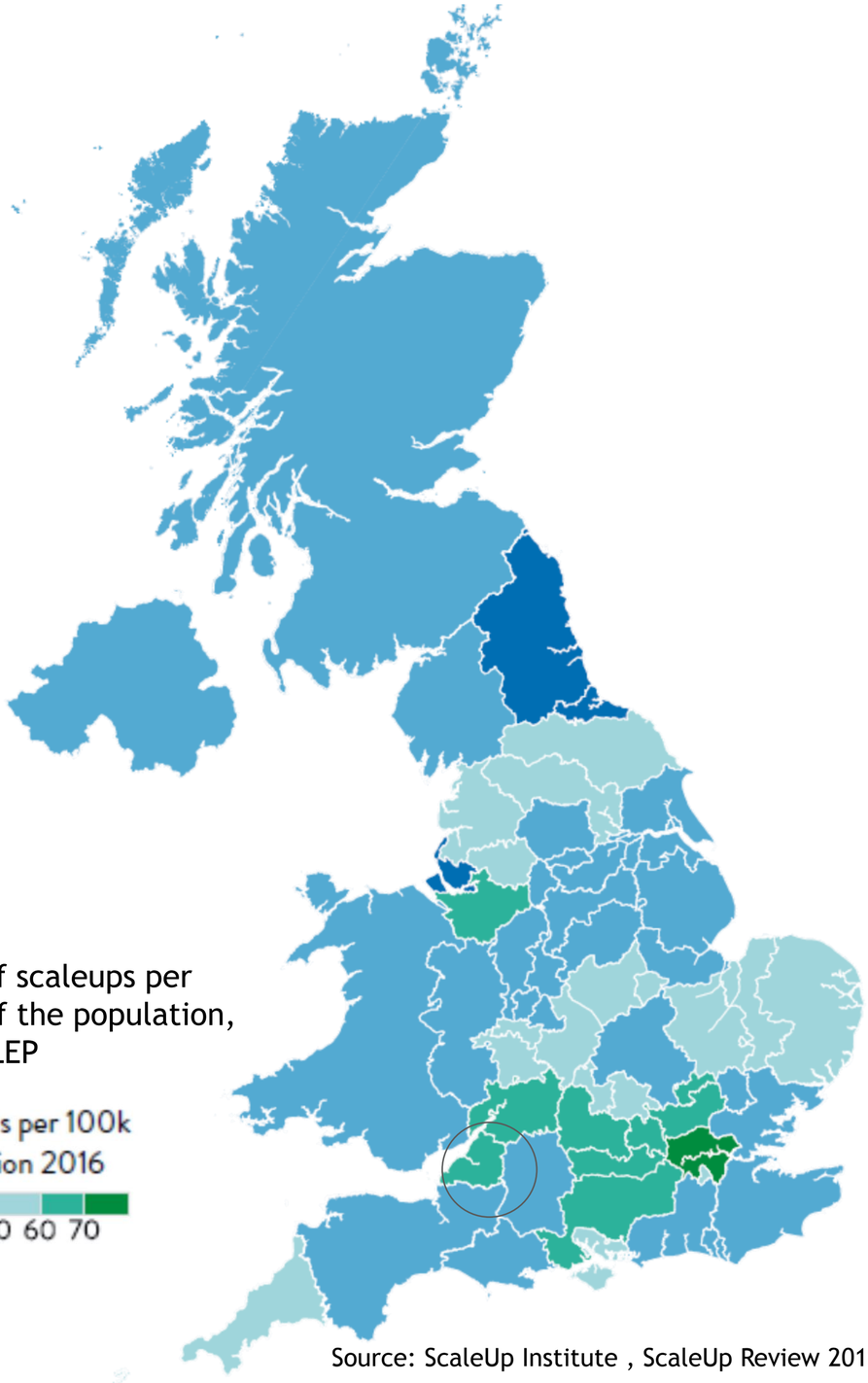
- 78% in Oxfordshire
- 82% UK average

26% grew both turnover and employment

- 19% in Oxfordshire
- 21% UK average

WofE has had the second fastest growth in scale-up density in the UK since 2013

- WofE connected to a corridor of high scale-up density across the M4 corridor to London (see map)



Number of scaleups per 100,000 of the population, 2016, by LEP

Source: ScaleUp Institute , ScaleUp Review 2018

FOUNDATIONS OF PRODUCTIVITY:

PLACE

Place: summary

- The region benefits from strong integration into other centres of economic activity; investment in the West of England produces high spill-overs for elsewhere.

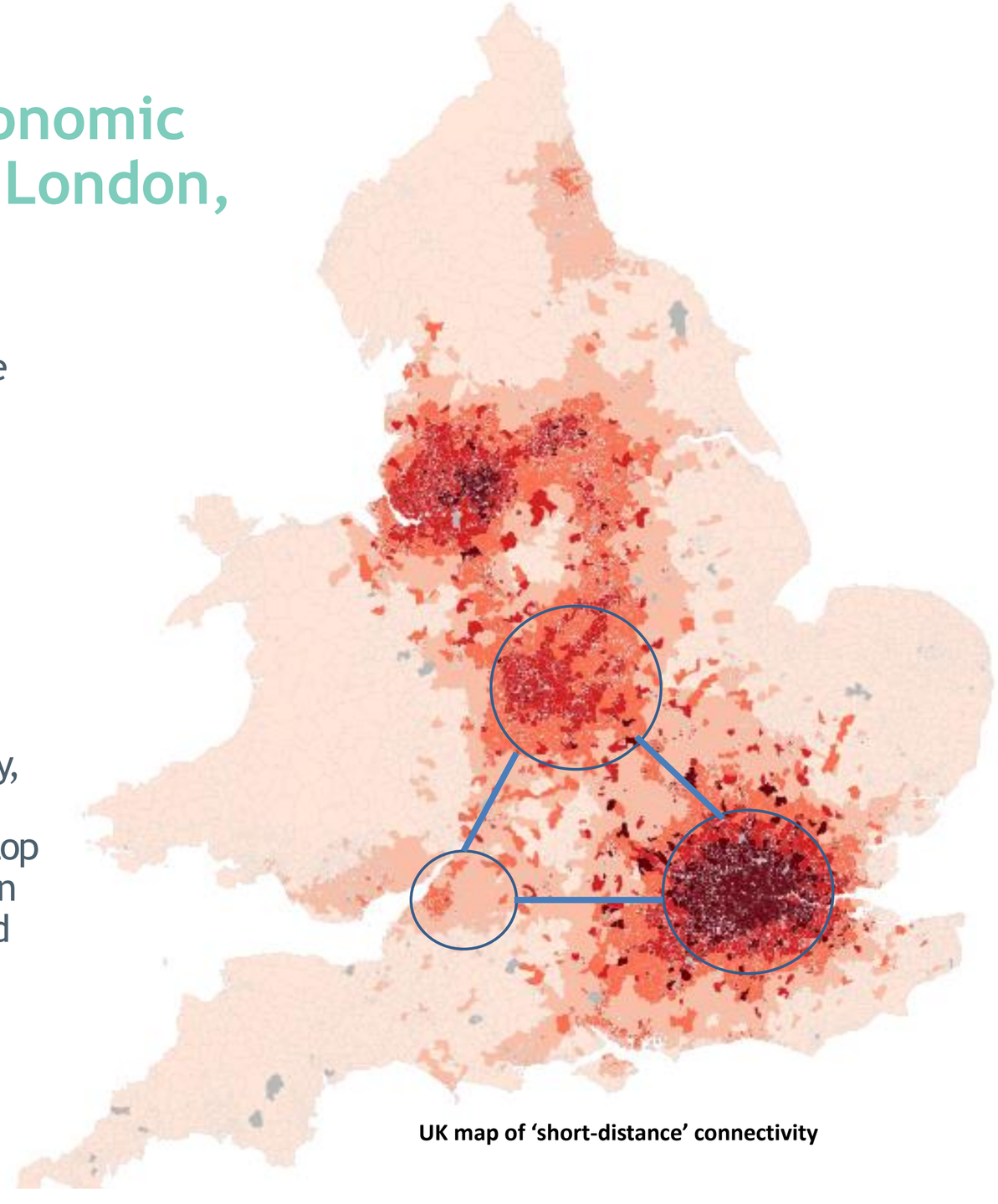
- There are disparities in the distribution of economic outcomes across the region, and among particular groups. This will contribute to understanding and balancing the distributive effects of the policies proposed in the strategy

West of England has strong economic linkages with Birmingham and London, more than to the S.W.

- There are strong links with major economic hubs in the UK, through business trading with each other, workers migrating and commuting, and ideas being exchanged

- Links are stronger on the routes to Birmingham and London than further to the south-west

- The region presents high returns to investment: roughly, for every £1 of value added by West of England businesses, the rest of the UK gains by about 60p – on top of the return to the region. This compares with a return of 45p on £1 of value added in other mayoral combined authorities



UK map of 'short-distance' connectivity

WEST OF ENGLAND Combined Authority

GRAND CHALLENGES

AI & Data Economy
We will put the UK at the forefront of the artificial intelligence and data revolution

Clean Growth
We will maximise the advantages for UK industry from the global shift to clean growth

Future of Mobility
We will become a world leader in the way people, goods and services move

Ageing Society
We will harness the power of innovation to help meet the needs of an ageing society

Grand Challenges: Summary

- The West of England has strengths across each of the four national Grand Challenge areas.
- There is strong collaboration between academia and industry across Grand Challenge topics, supporting the development of innovation focused on addressing real world challenges.
- There is a strong and proactive voluntary and community sector with a focus on addressing the challenges of an ageing society and clean growth.
- The region is good at developing ways of putting new technology into practical use that is accepted by society, which will be important in developing and testing responses to each of the grand challenges.
- Applying our strength in AI and Big Data into businesses enables a wide range of innovation across the region rather than being focused on a specific area of work.

Ageing society

National mission: Ensure that people can enjoy at least 5 extra healthy, independent years of life by 2035, while narrowing the gap between the experience of the richest and poorest

Regional strengths:

- research excellence in the universities
- policy innovations in integration within local government
- a growing number of med-tech firms
- strong and proactive community sector

Potential opportunities include:

- supporting the growth of health tech and digital health through research
- making use of the Health Tech Hub
- developing innovative public sector initiatives

The importance of narrowing the gap in quality of life between richest and poorest was emphasised, particularly linked to the Strategy's principle of inclusive growth.

Artificial intelligence and data

National mission: Use data, Artificial Intelligence and innovation to transform the prevention, early diagnosis and treatment of chronic diseases by 2030

Regional strengths:

- academic research programmes, both on technology and social use
- academic collaboration with industry
- well-developed high-tech business growth and skills base, with key innovative firms

AI and data are key enablers of innovation across the region, in a wide range of sectors. As such, it is a strategically important focus for the West of England but should not be viewed as tied to a specific sector or mission.

Clean growth

National mission 1: At least halve the energy use of new buildings by 2030

National mission 2: Establish the world's first net-zero carbon industrial cluster by 2040 and at least 1 low-carbon cluster by 2030

Regional strengths:

- economic growth while reducing carbon emissions in recent years
- proud record on environmental issues (Bristol as European Green Capital in 2015 and ownership of large-scale renewable energy capacity)
- range of business activity and a strong engineering skills base
- active social enterprises growing community energy projects

Key opportunities include:

- the ongoing development of the regional Energy Strategy
- developing clean transport programmes
- providing public sector leadership
- supporting smart energy and energy technology.

Future of mobility

National mission: Put the UK at the forefront of the design and manufacturing of zero emission vehicles, with all new cars and vans effectively zero emission by 2040

Regional strengths:

- excellent research and strong clusters of businesses in aerospace and other sectors relevant to the Challenge, such as robotics and composite materials
- experience in bringing together researchers and a range of businesses with high-value design expertise to develop collective projects or bids
- digital expertise

A strong field of opportunities for a local mission. Areas for investigation include:

- system development and design to support integrated transport planning
- testing new transport models
- build on data security strengths
- understanding the establishment of electric charging infrastructure

WEST OF ENGLAND
LOCAL INDUSTRIAL STRATEGY

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