

SEMLEP LOCAL INDUSTRIAL STRATEGY

EVIDENCE BASE

August 2018

SEMLEP

South East Midlands
Local Enterprise Partnership



Contents

- ▶ Overarching Economic & Demographic Evidence
- ▶ Key Sectors & Sub-Sectors
- ▶ Current Business Constraints
- ▶ Future Trends & Projections
- ▶ SEMLEP & the Growth Corridor





SEMLEP: Overarching Economic & Demographic Evidence

SEMLEP

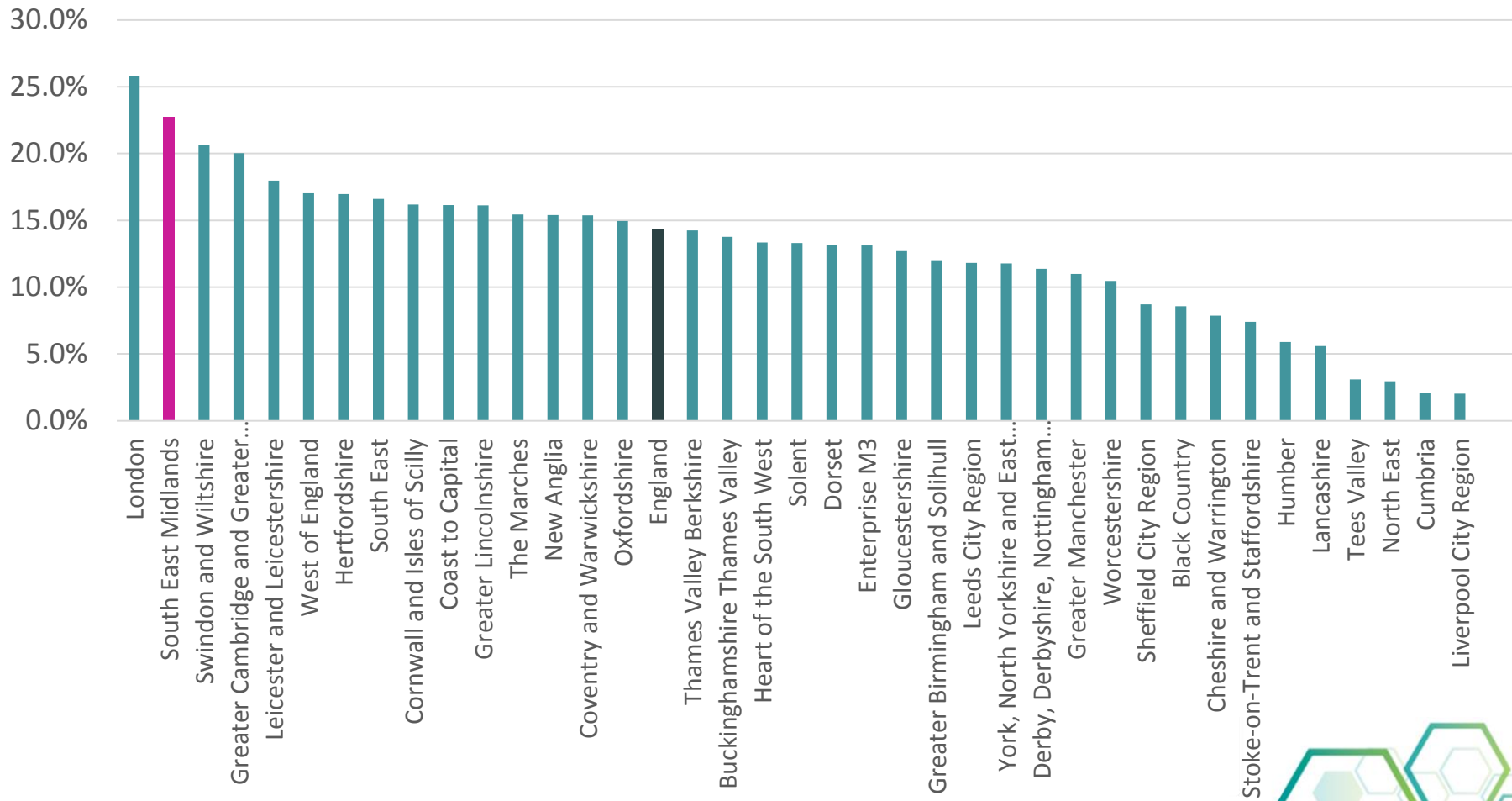
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SEMLEP occupies a strategically and economically important position at the nexus of Oxford, Cambridge, Birmingham and London



Over the past two decades, the population of SEMLEP has grown faster than any other LEP area outside London...

Population growth, 1997-2017, all LEPs (% change)



SEMLEP

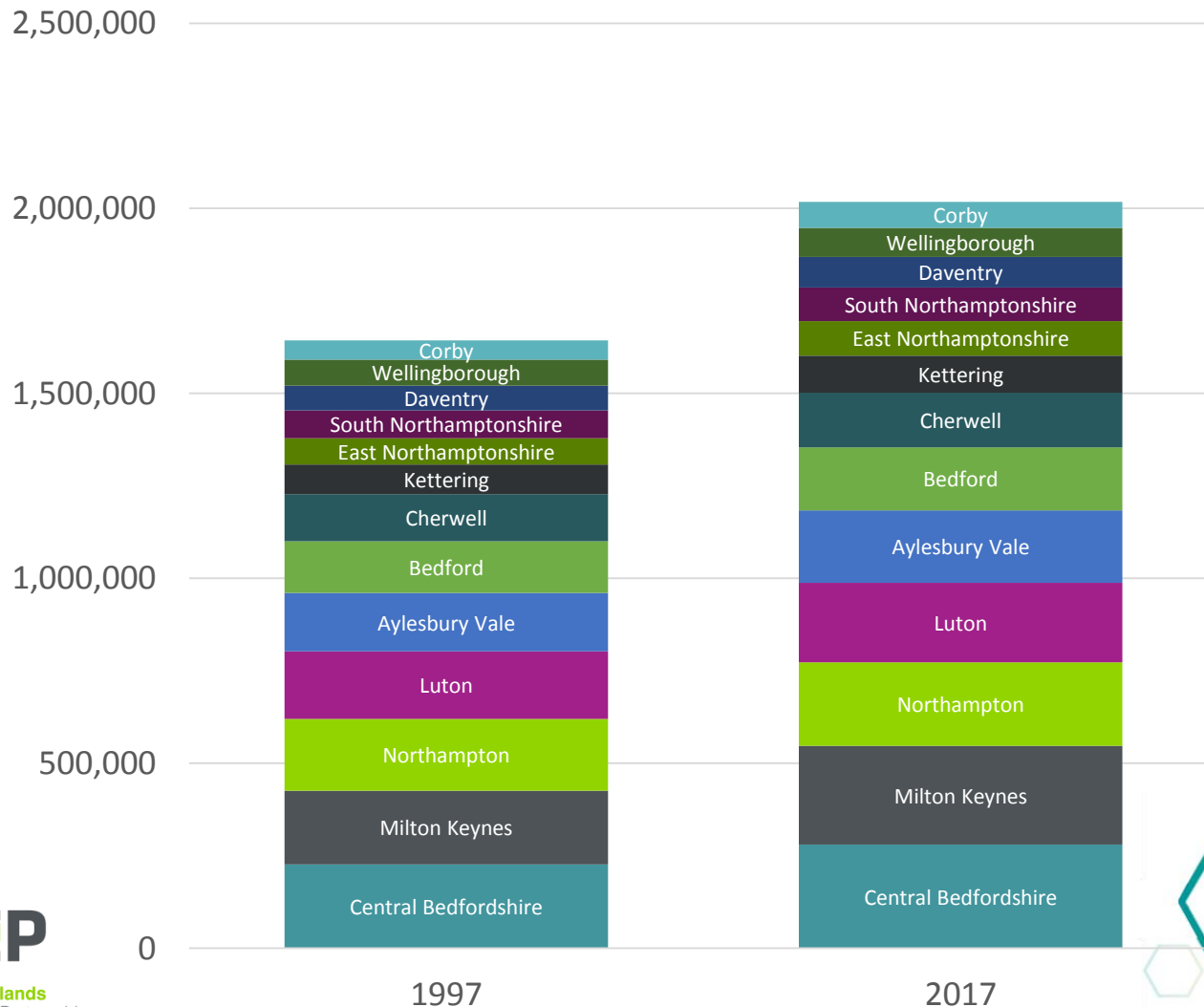
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[Source: ONS population estimates]



...taking the current SEMLEP population to c.2m

SEMLEP Population Growth, 1997-2007



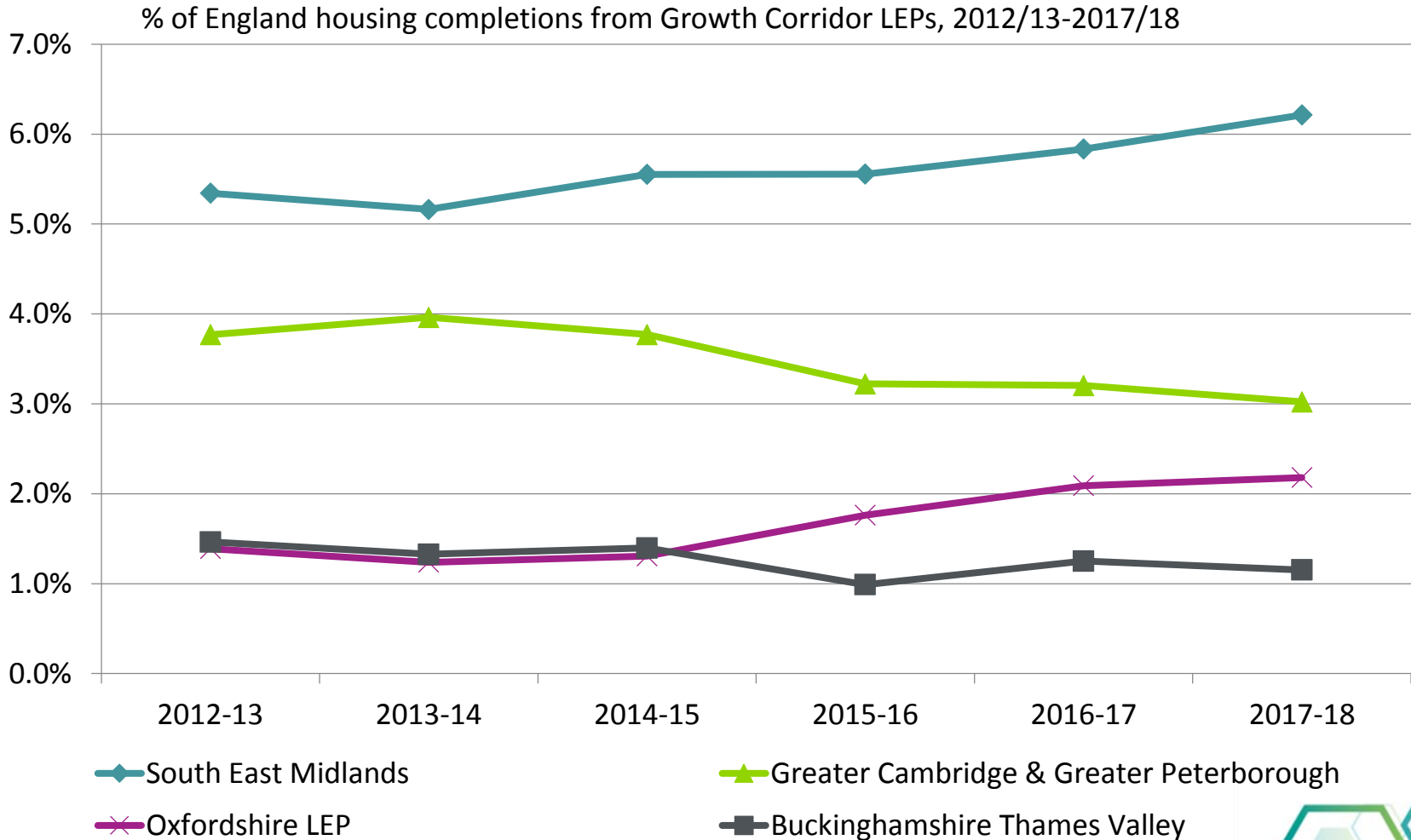
[Source: ONS
population
estimates]

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In recent years, SEMLEP has contributed a substantial, and increasing, share of national housing completions



SEMLEP contributes some £50bn in GVA to the national economy

£m

50000

40000

30000

20000

10000

0

Cherwell

Aylesbury Vale

Milton Keynes

Central Bedfordshire

Bedford

Luton

Wellingborough

Kettering

East Northamptonshire

Corby

South Northamptonshire

Northampton

Daventry

SEMLEP

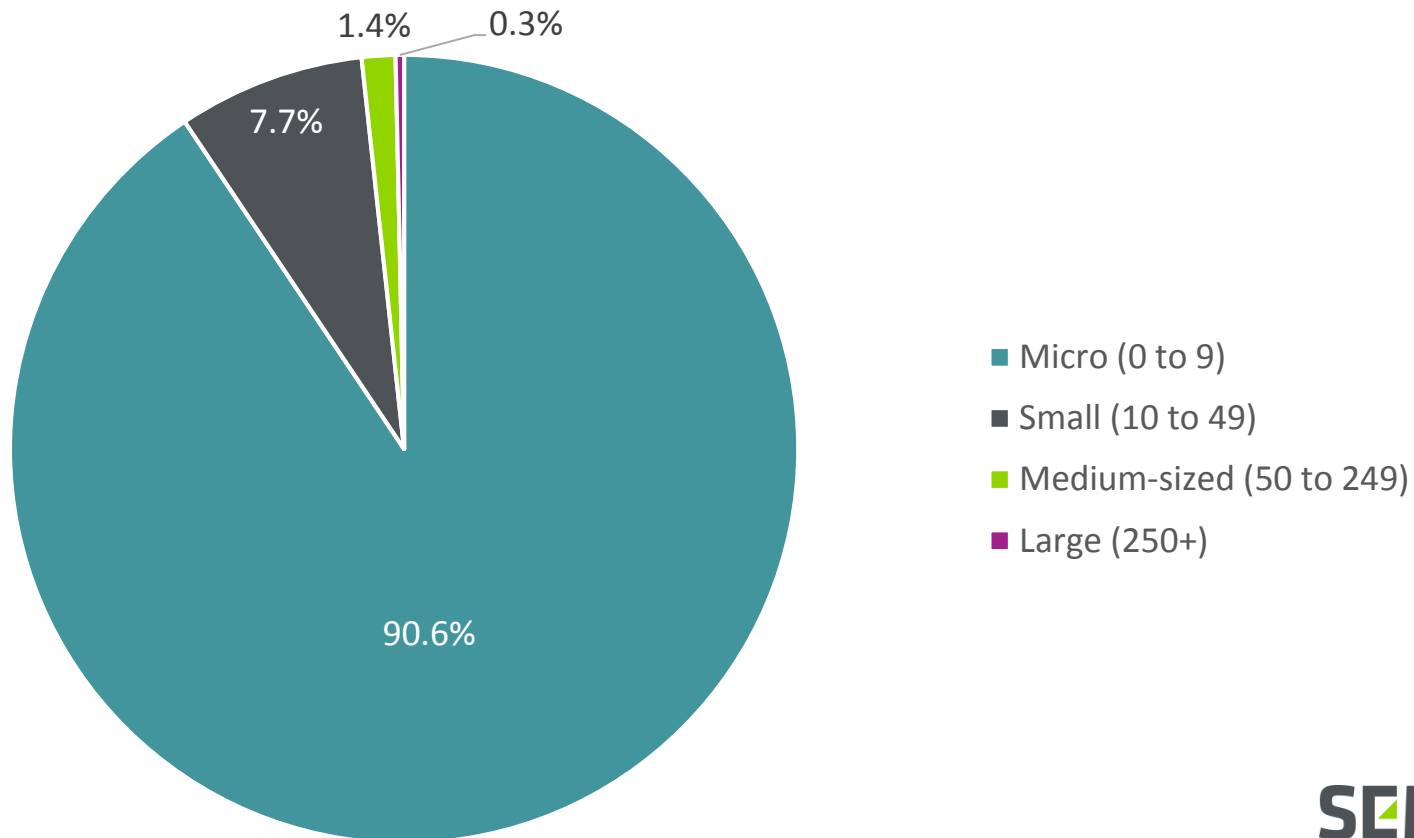
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[Source: 2015 figures;
ONS experimental stats]



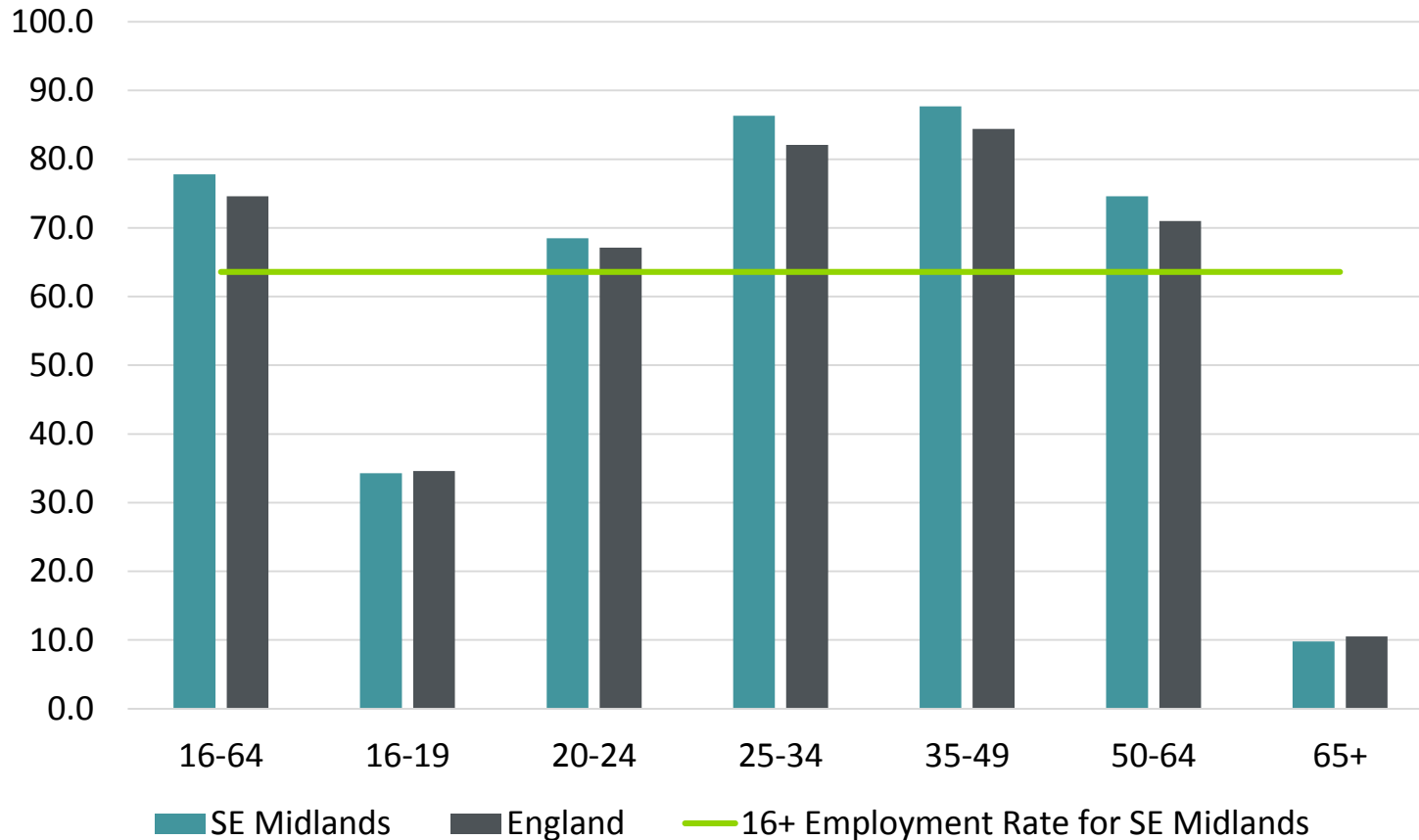
There are over 90,000 PAYE-registered business enterprises in the SEMLEP area, and the vast majority of these are micro businesses

Business enterprises in the SEMLEP: % split by size, 2017



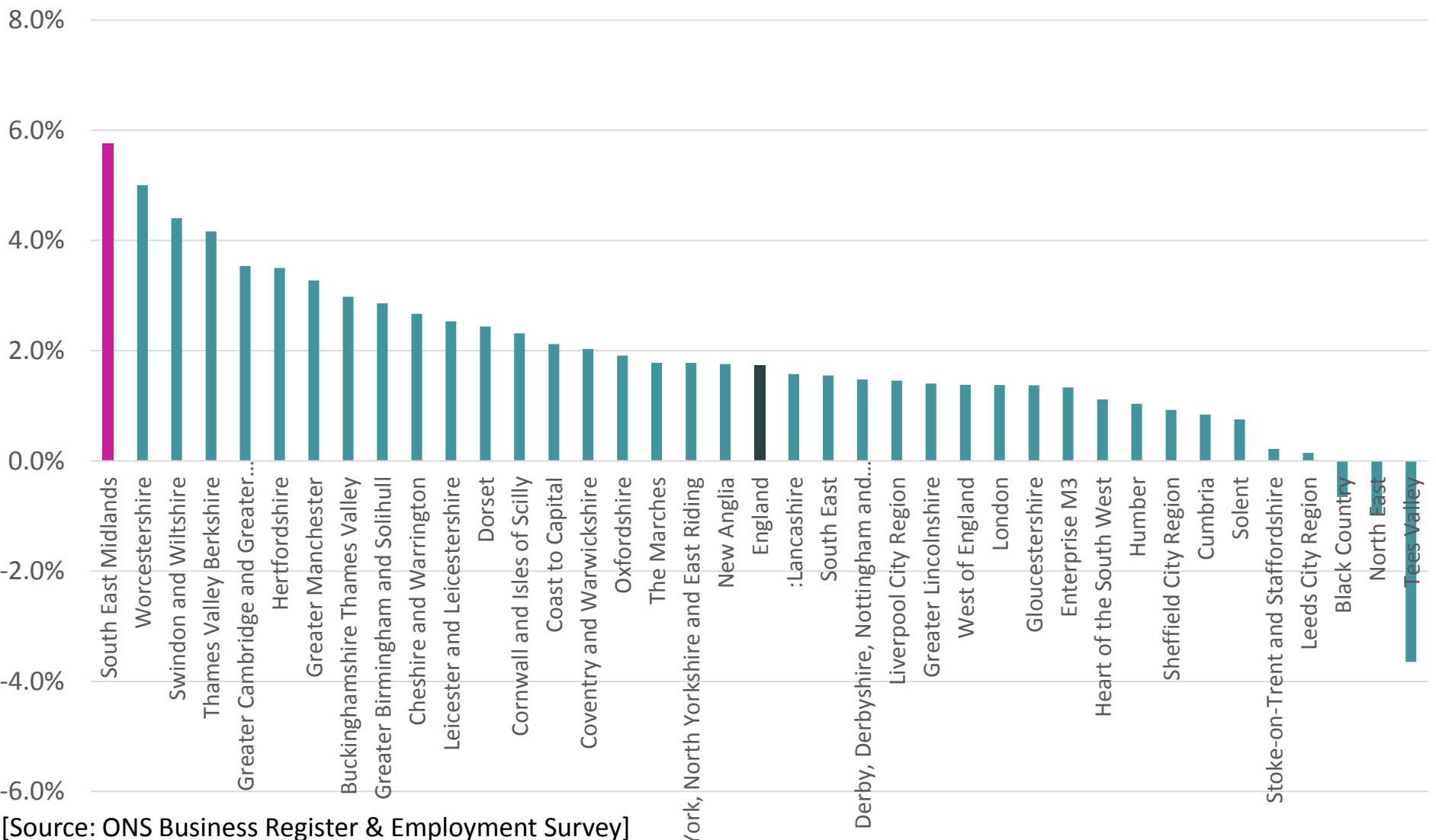
SEMLEP has a high employment rate...

Employment Rate by Age Band, SE Midlands & England,
12 months to June 2017



...and is the top performing LEP for recent employment growth

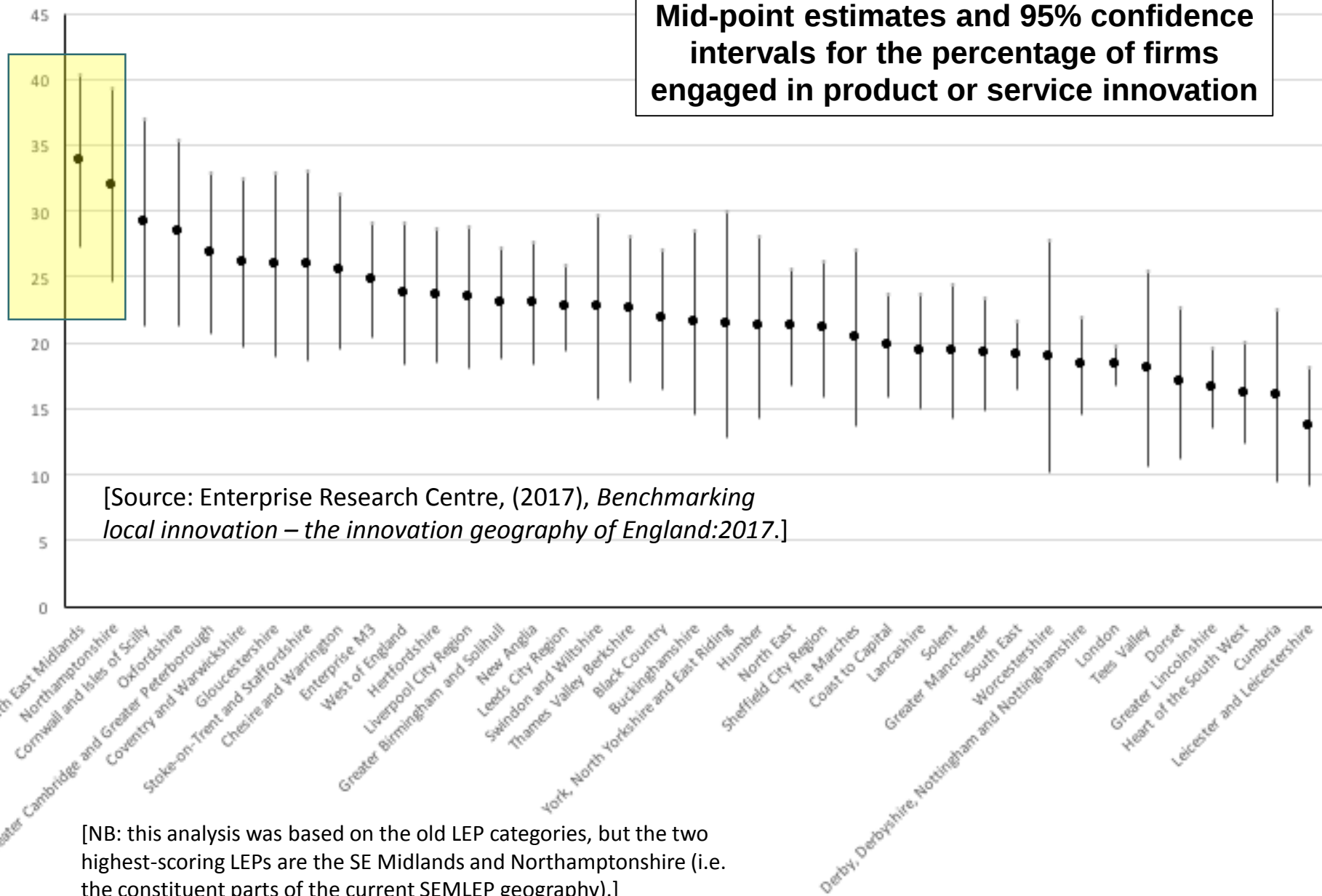
% Employment Growth, 2015-16, all LEPs



[Source: ONS Business Register & Employment Survey]

SEMLEP is a highly innovative area...

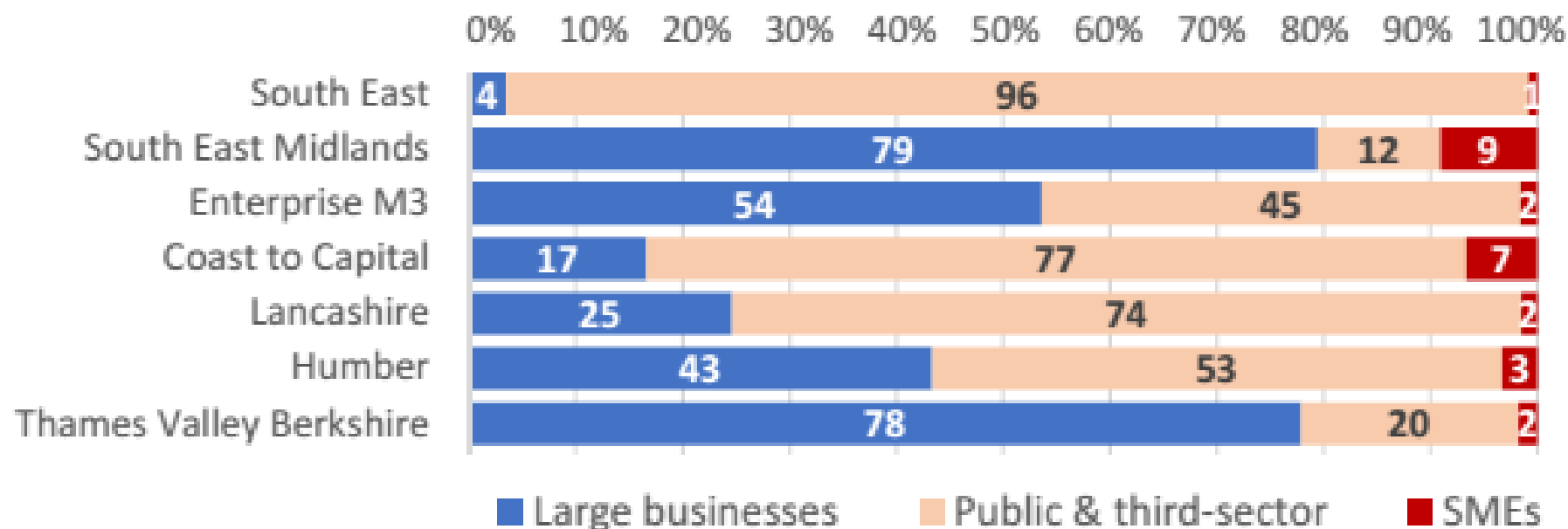
Mid-point estimates and 95% confidence intervals for the percentage of firms engaged in product or service innovation



[NB: this analysis was based on the old LEP categories, but the two highest-scoring LEPs are the SE Midlands and Northamptonshire (i.e. the constituent parts of the current SEMLEP geography).]

...with an impressive commercialisation record

Contract Research – annual average 2010/11-2012/13 – % split in income: 'large businesses', 'public & third sector' and SMEs



- From 2010/11-2012/13, Higher Education Institutions in the SEMLEP area received 79% of their contract research income from large businesses, which is nearly 2.5 times the share for England as a whole.

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[Source: BEIS, (2015), *Mapping Local Comparative Advantages in Innovation*.
Annual average 2010/11-2012/13]



It contains two of the top 10 UK cities for recent private sector jobs growth

Rank	City	Change, 2015-2016 (%)	Private sector jobs, 2015	Private sector jobs, 2016	Net job gains or losses
10 cities with the highest net private sector jobs growth					
1	Luton	15.7	67,000	77,500	10,500
2	Crawley	11.3	75,000	83,500	8,500
3	Chatham	8.3	60,500	65,500	5,000
4	Milton Keynes	8.2	134,500	145,500	11,000
5	Slough	6.2	65,000	69,000	4,000
6	Blackburn	5.9	42,500	45,000	2,500
7	Dundee	5.6	44,500	47,000	2,500
8	Newport	5.5	73,000	77,000	4,000
9	Reading	5.3	141,000	148,500	7,500
10	Exeter	5.1	58,500	61,500	3,000



SEMLEP contains some productivity hotspots, most notably Milton Keynes...

Rank	City	GVA per worker, 2016 (£)
10 cities with the highest GVA per worker		
1	Slough	82,100
2	London	77,300
3	Reading	70,800
4	Milton Keynes	66,900
5	Aldershot	62,400
6	Edinburgh	59,800
7	Swindon	59,500
8	Aberdeen	59,300
9	Portsmouth	57,000
10	Bristol	56,900



... but SEMLEP's overall productivity is not as high as elsewhere in the Corridor (I)

(Nominal, Smoothed) GVA per filled job, across the Growth Corridor, 2016 (£)



SEMLEP

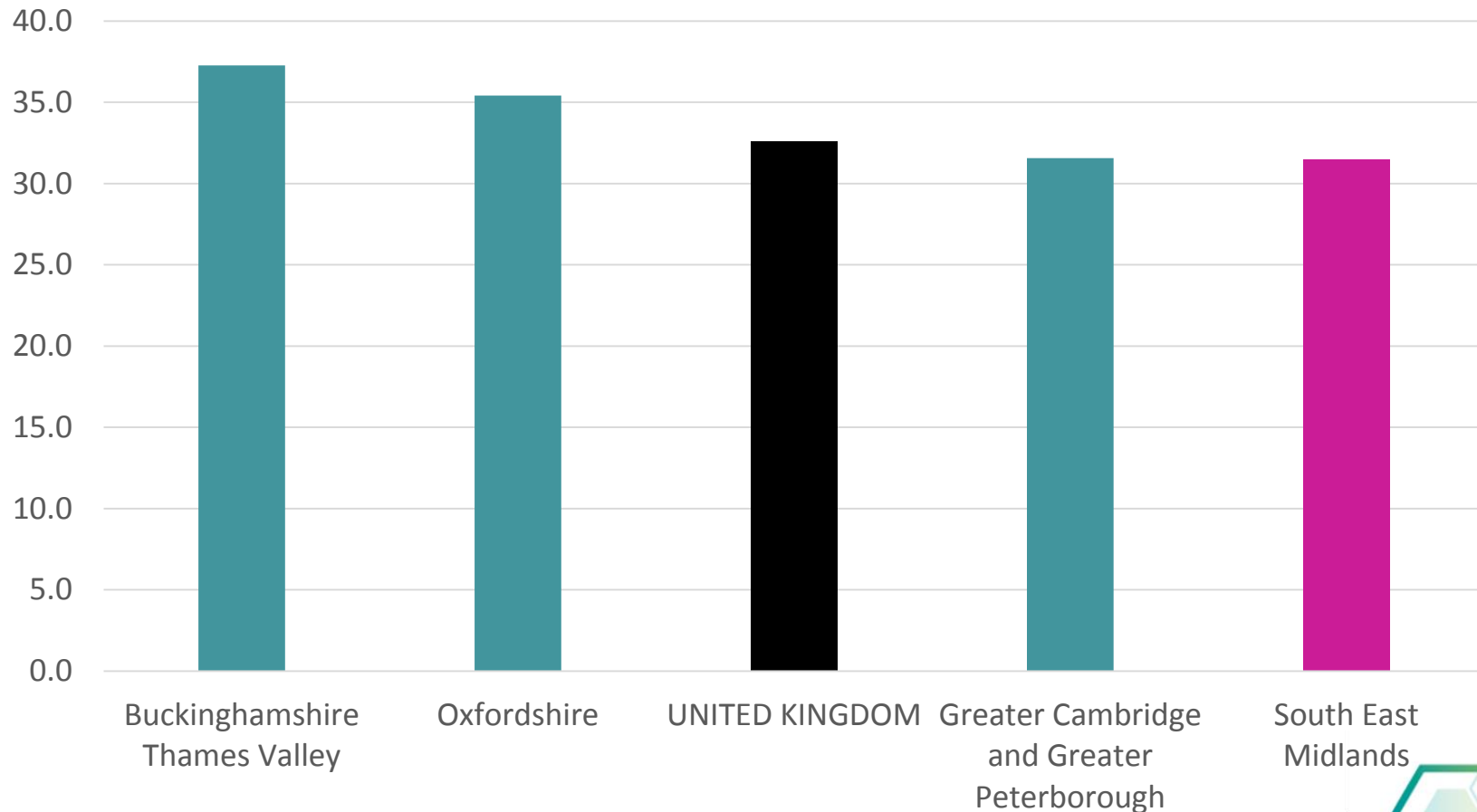
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[Source: ONS]



... but SEMLEP's overall productivity is not as high as elsewhere in the Corridor (II)

(Nominal, Smoothed) GVA per hour worked, across the Growth Corridor, 2016 (£)



SEMLEP

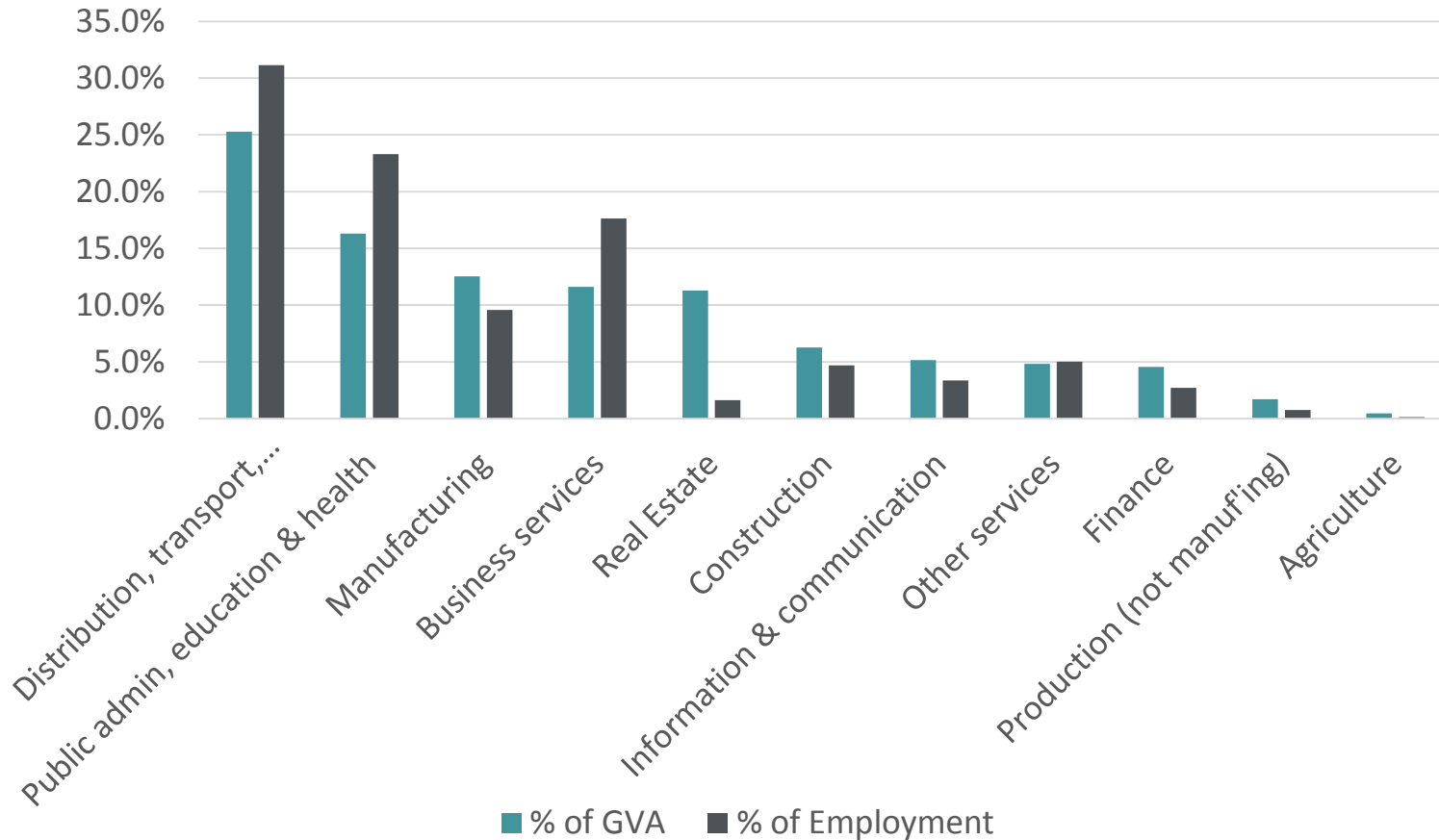
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[Source: ONS]



High productivity sectors include Construction, Manufacturing, Real Estate, ICT & Finance

SEMLEP: % of GVA vs. % of Employment, by Industrial Sector, 2015



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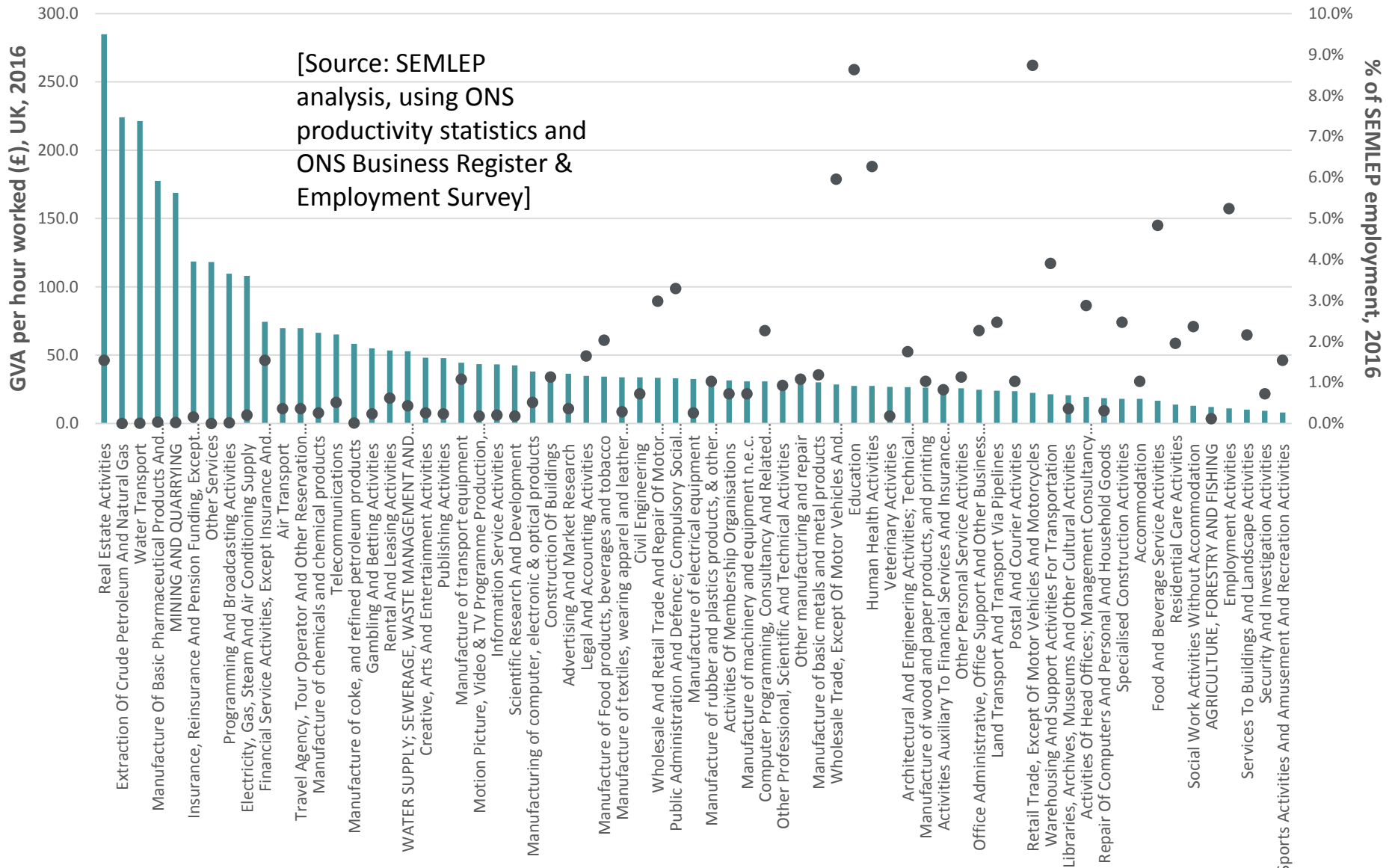
[Source: SEMLEP analysis, using ONS sub-regional productivity statistics and ONS Business Register & Employment Survey]



While lower-productivity sectors include Logistics sub-sectors and Food & Drink service activities

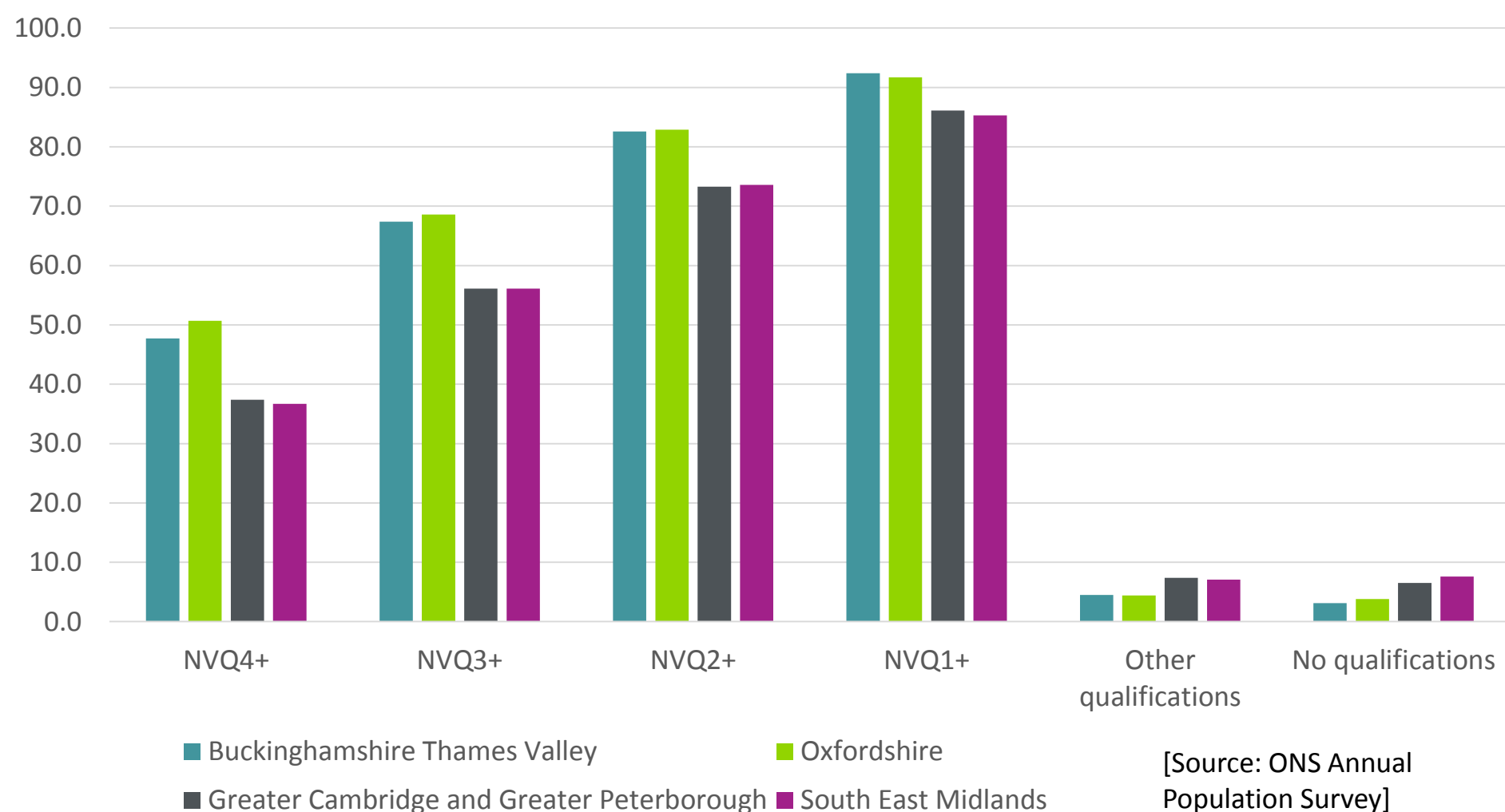
UK Productivity vis-a-vis SEMLEP Employment, by Industrial Sector, 2016

[Source: SEMLEP analysis, using ONS productivity statistics and ONS Business Register & Employment Survey]



Qualifications in SEMLEP are in line with GCGP but below those of Oxfordshire and Buckinghamshire...

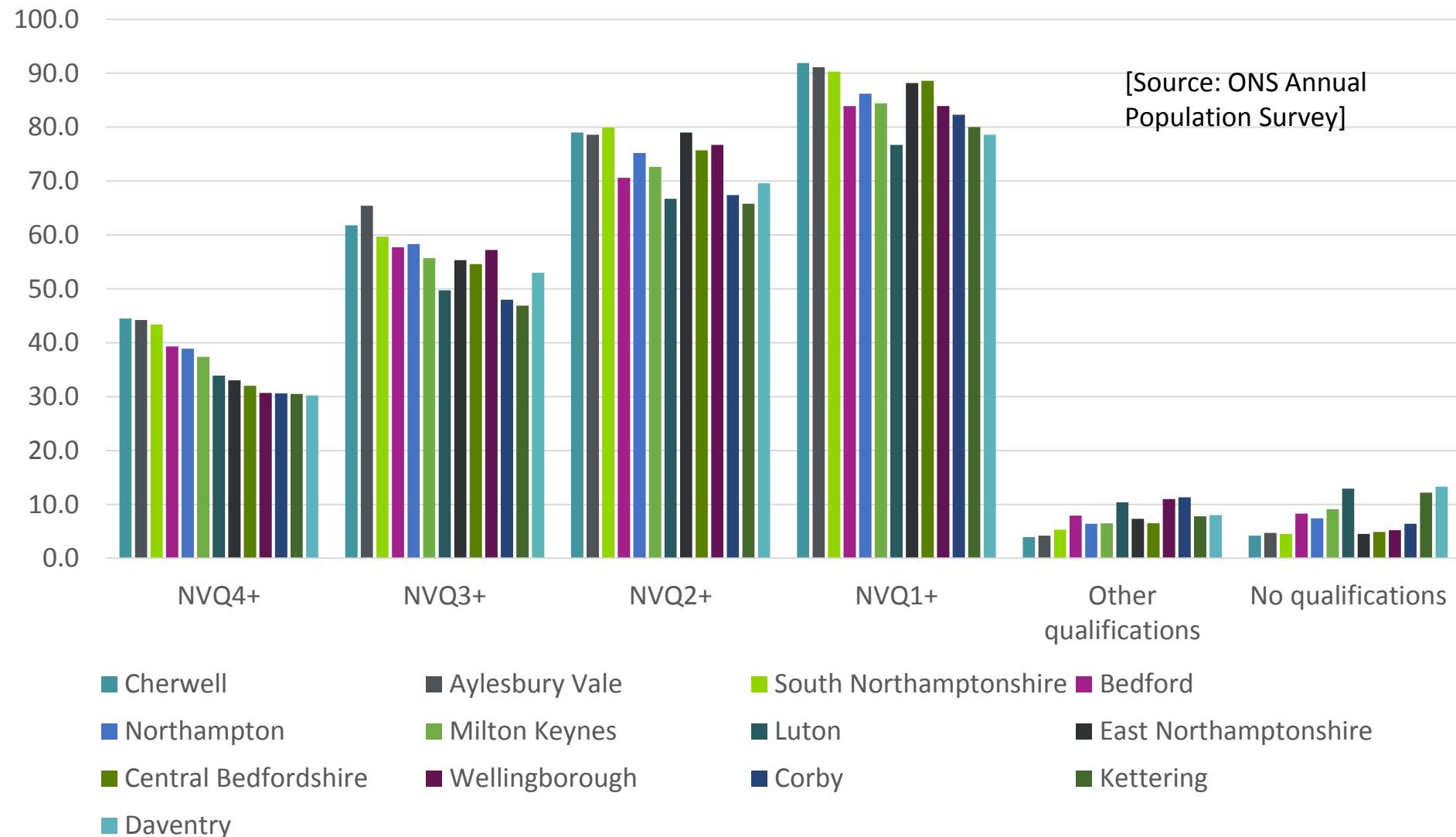
Qualifications of those aged 16-64 across the Corridor, 2017 (%)



...although this masks considerable variation within SEMLEP

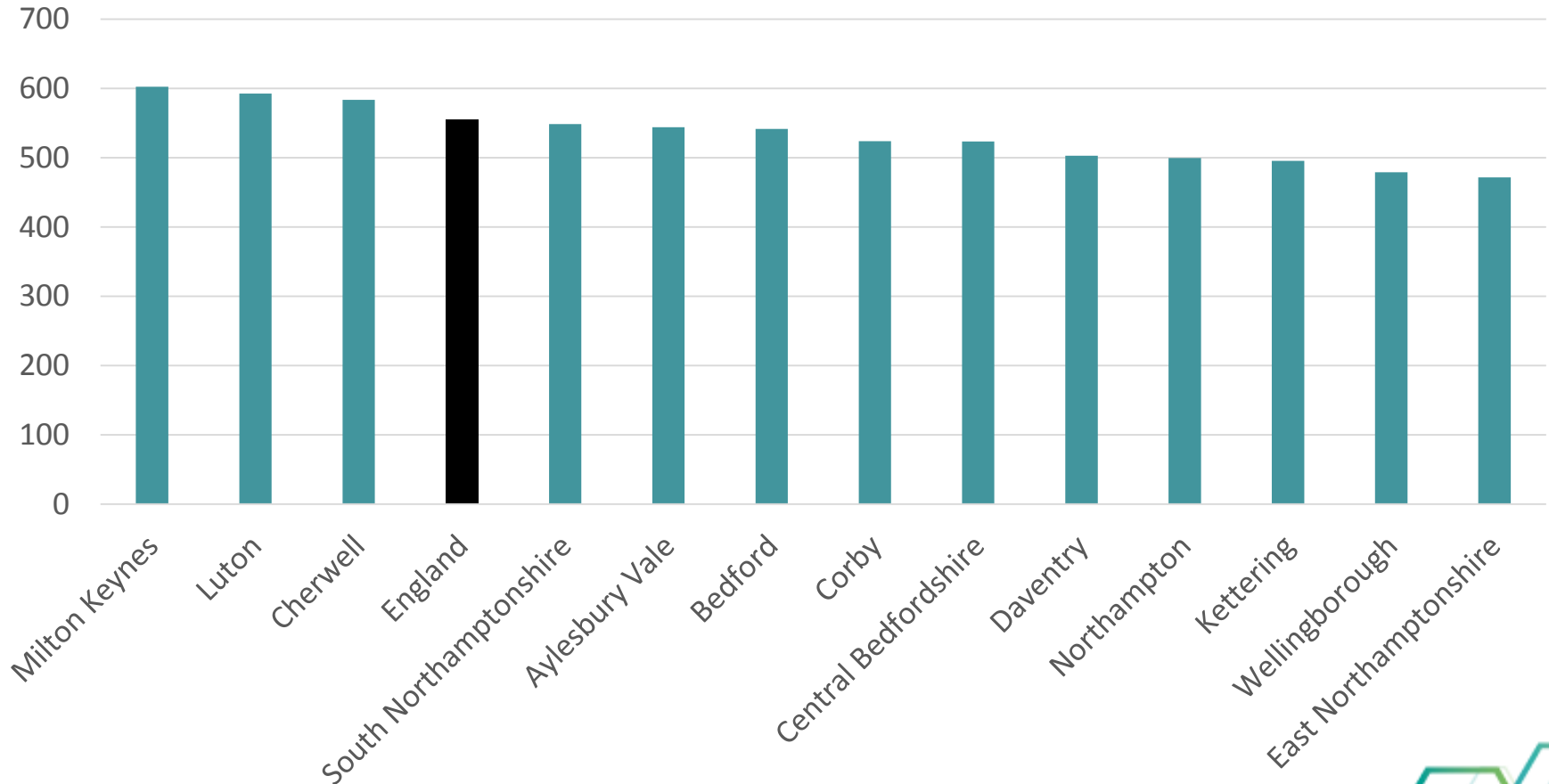
Qualifications of those aged 16-64 in the SEMLEP area, 2017 (%)

[Source: ONS Annual Population Survey]



Only three local authorities in the SEMLEP area have higher work place wages than the England average...

SEMLEP Work Place Wages, Median FT Gross Weekly Pay, 2017 (£)



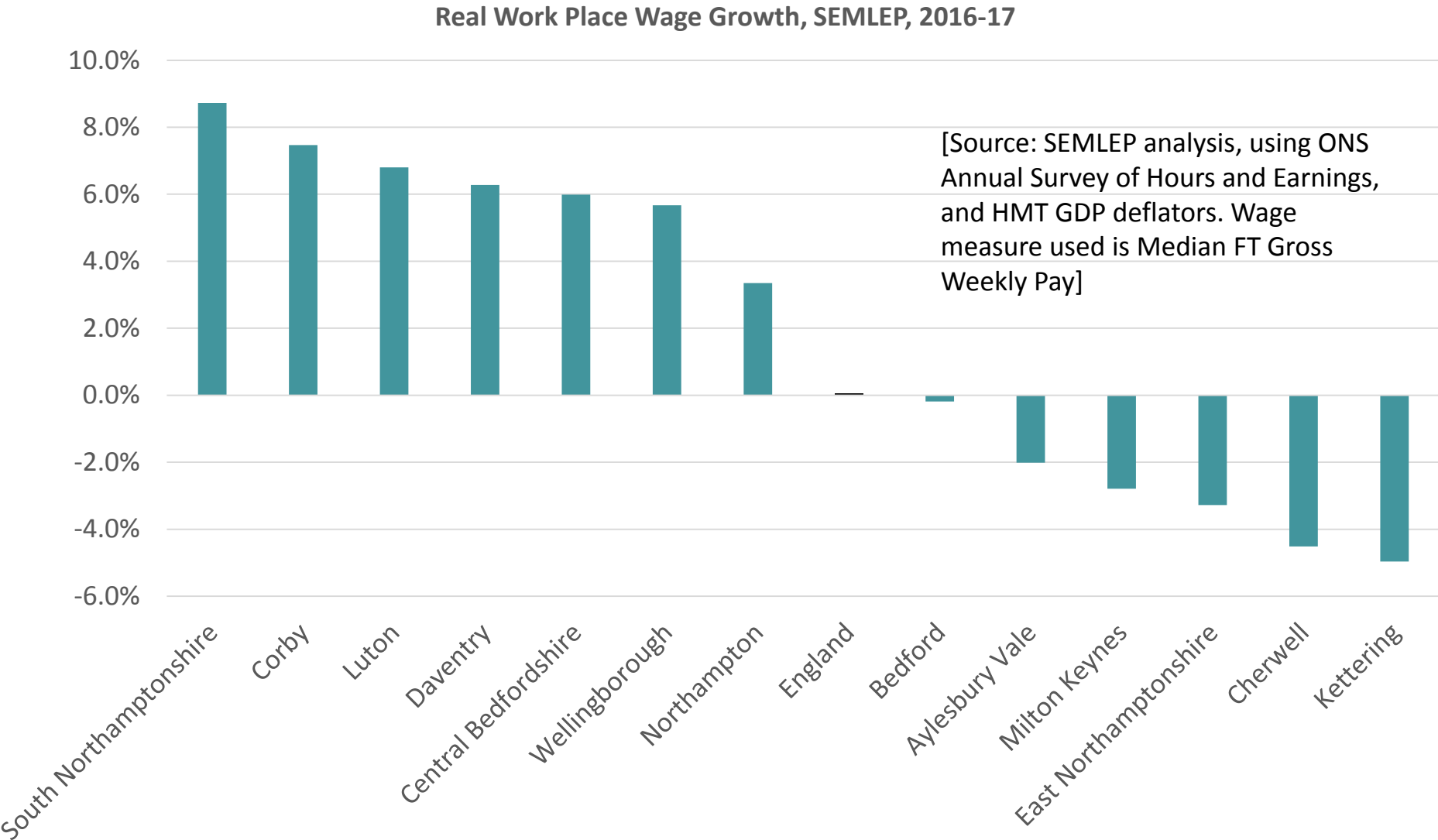
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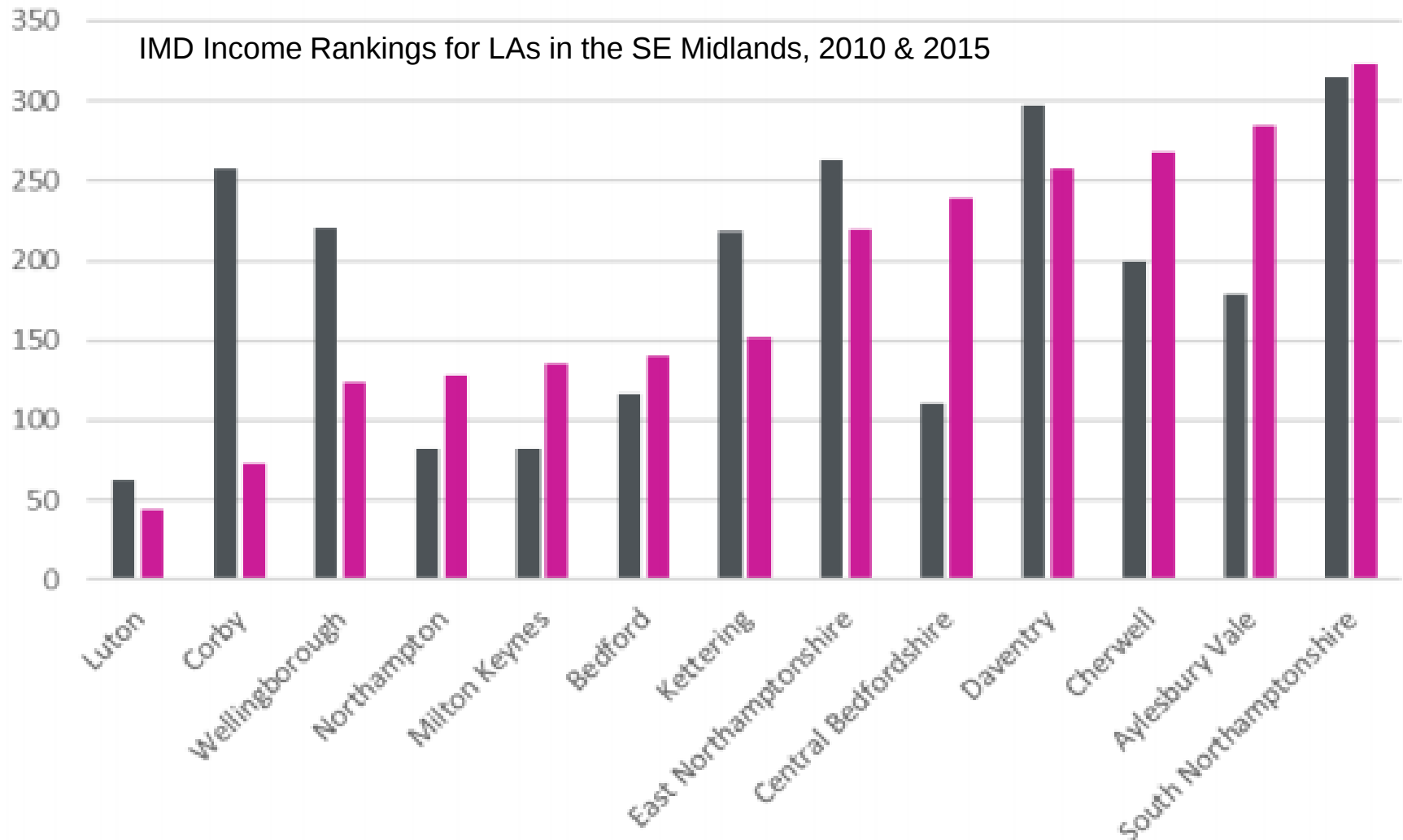
[Source: ONS Annual Survey of Hours and Earnings]



...but recent real wage growth in much of the SEMLEP area has outstripped that of England



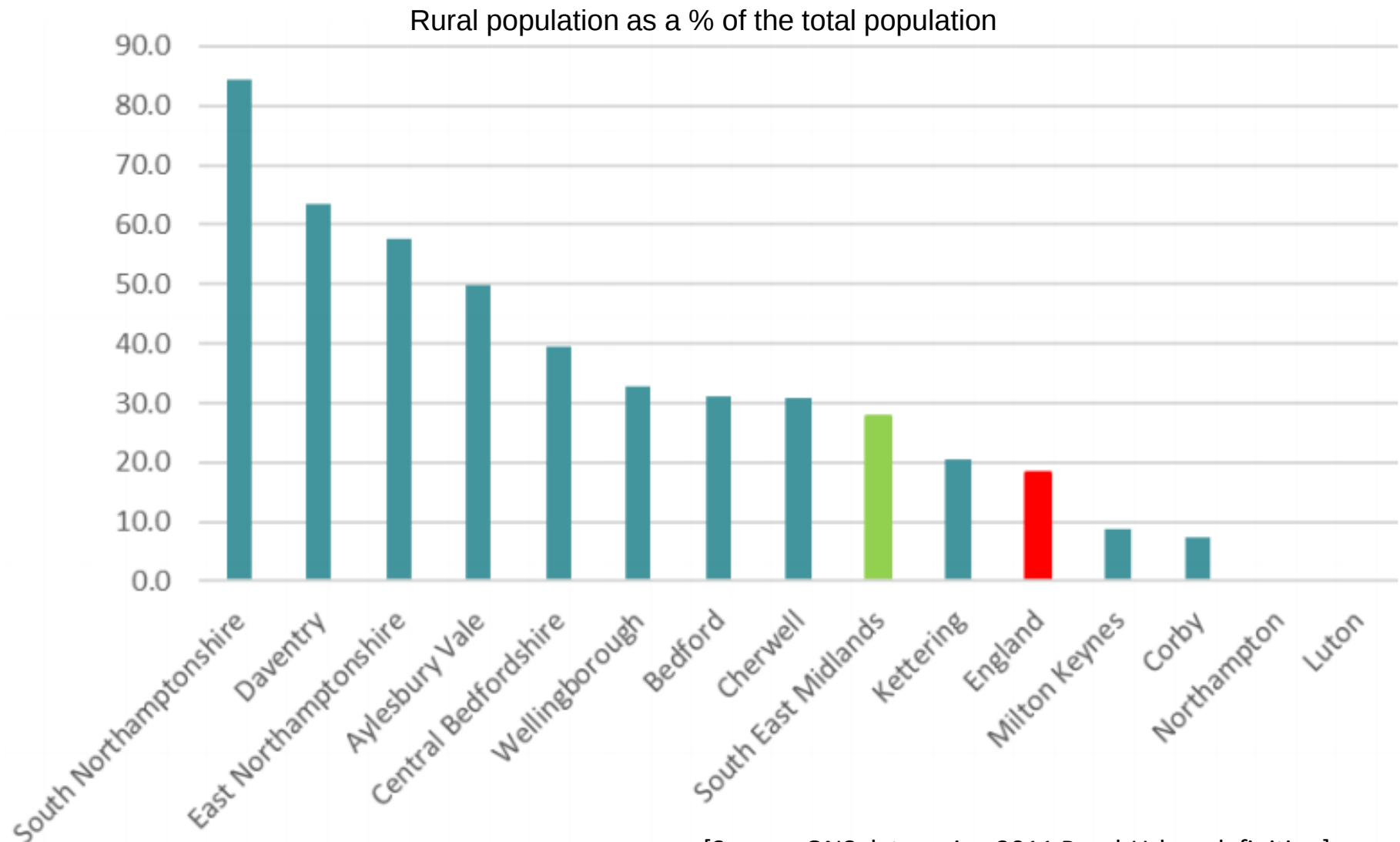
The SE Midlands has pockets of relative deprivation...



[1=most deprived LA; 326=least deprived LA]

[Source: Indices of Deprivation, 2010 & 2015]

...and is very varied in terms of the urban-rural split



[Source: ONS data, using 2011 Rural-Urban definition]

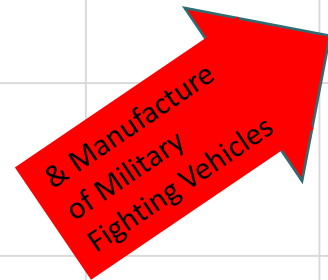
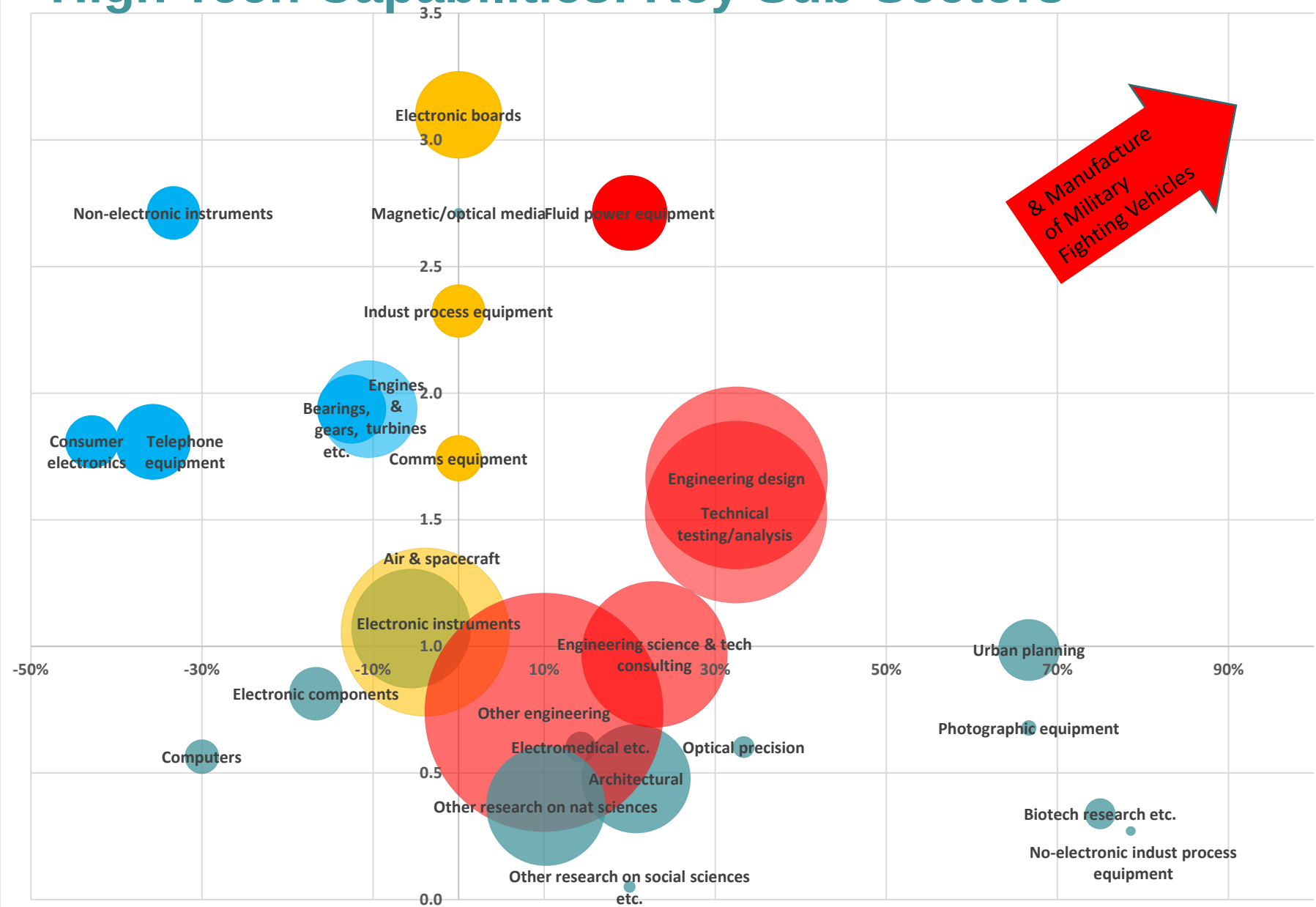


SEMLEP: Key Sectors & Sub-Sectors

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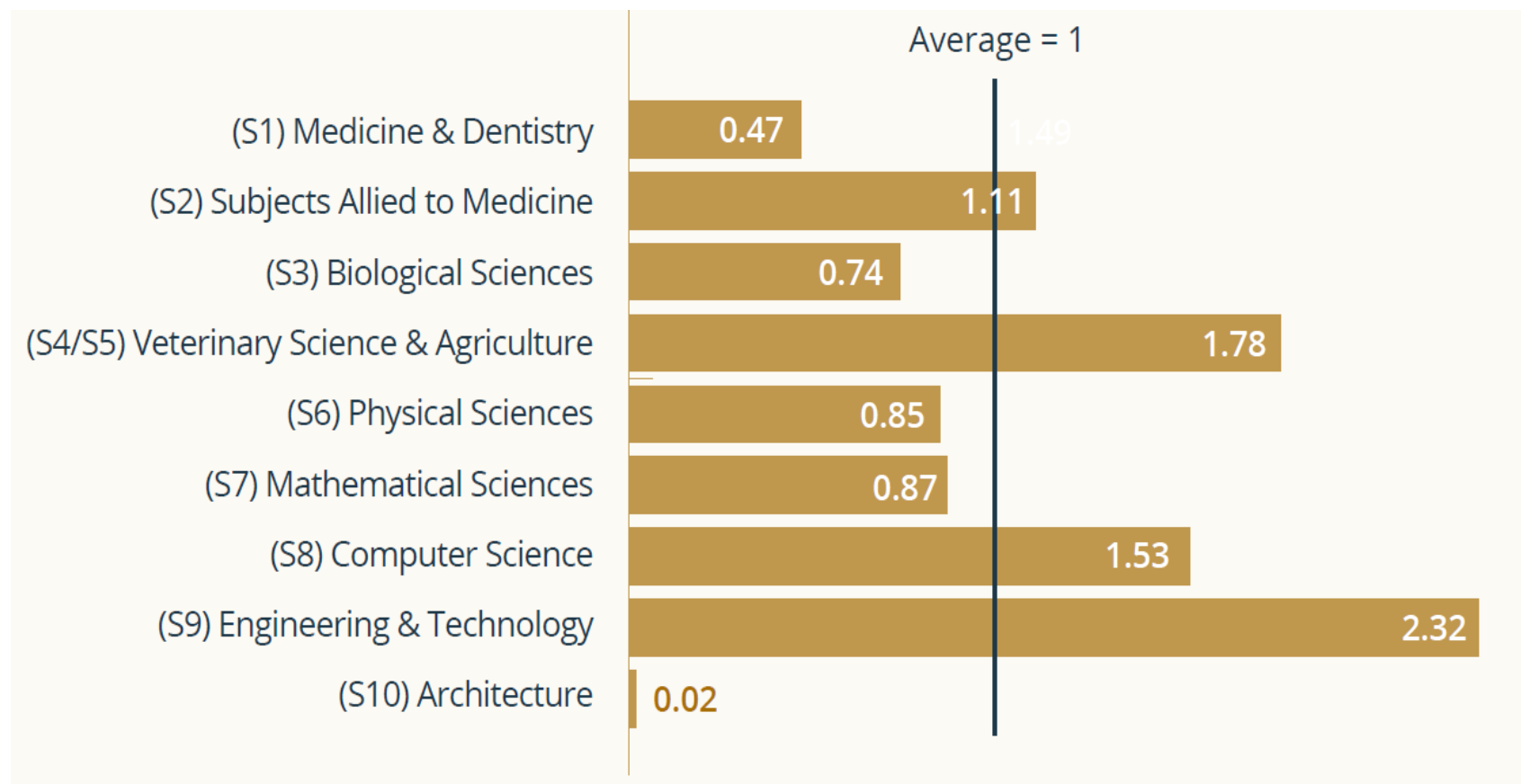
High Tech Capabilities: Key Sub-Sectors



[Source: SEMLEP analysis, using ONS Business Register and Employment Survey: x-axis = national employment growth, 2009-15; y-axis = SEMLEP Location Quotient; size of bubble = quantity of employment in SEMLEP]

SEMLEP is a long way above the LEP average for Engineering & Technology and Computer Science research

Indicator of Staff Submitted for Involvement in Innovative Research Production to the Research Excellence Framework, SEMLEP vis-à-vis other LEPs



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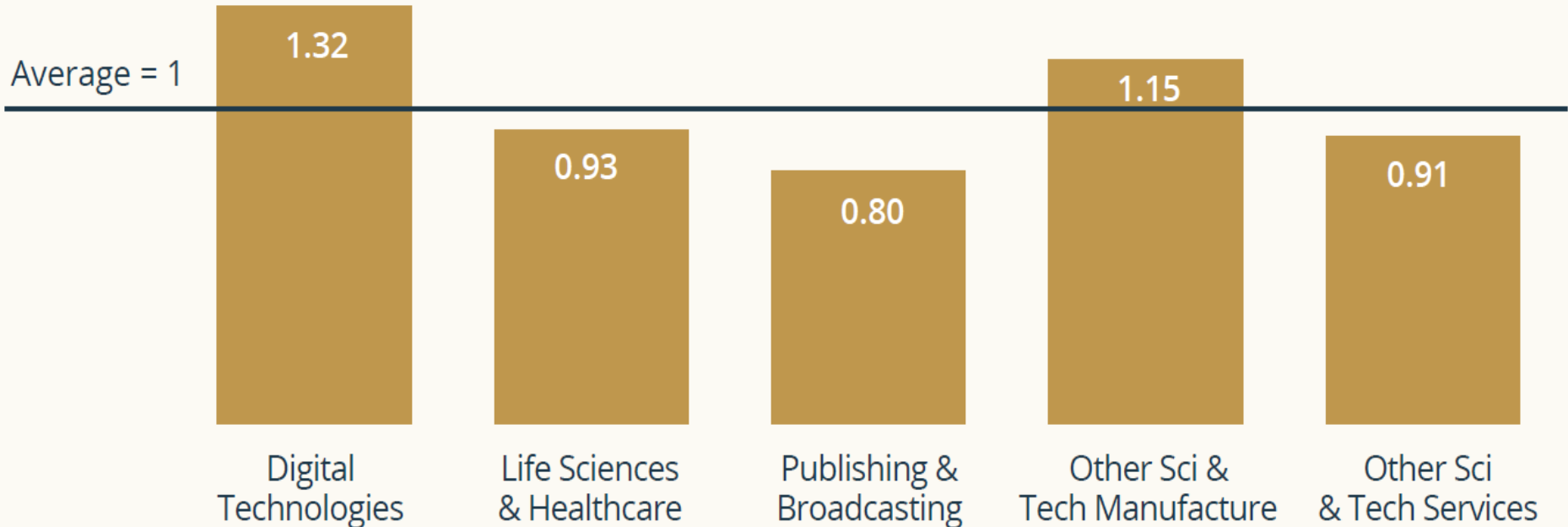
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[Source: Smart Specialisation Hub LEP Profiles]



And has higher than average employment in Digital Technologies and Other Science & Technology Manufacture

Employment by Science & Technology Category
SEMLEP vis-à-vis other LEPs



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[Source: Smart Specialisation Hub LEP Profiles]



The South East Midlands is a key player in the development of Connected and Autonomous Vehicles, and Next Generation Transport more broadly...



Multi-Use Environment
Autonomous Vehicle
Innovation (MUEAVI), Cranfield



Transport Systems Catapult,
Milton Keynes



SEMLEP

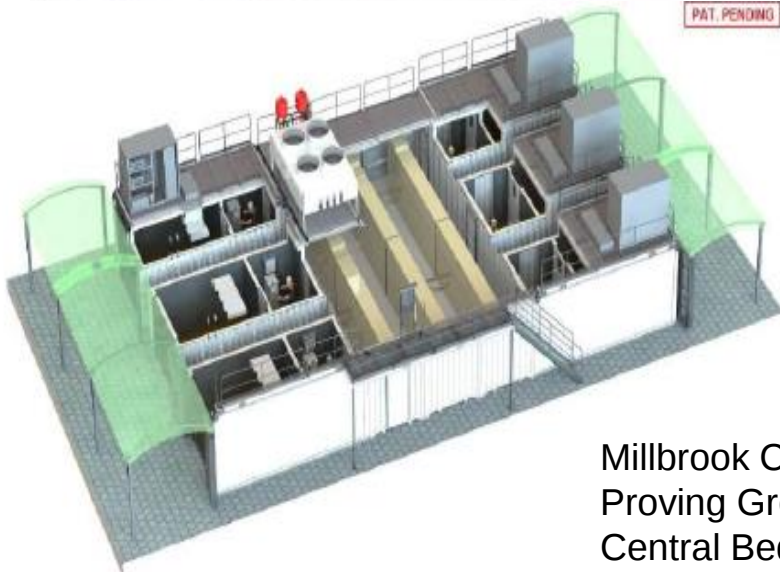
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...and is unique in the testing facilities that it provides



PAT. PENDING



Millbrook Central
Proving Ground,
Central Bedfordshire



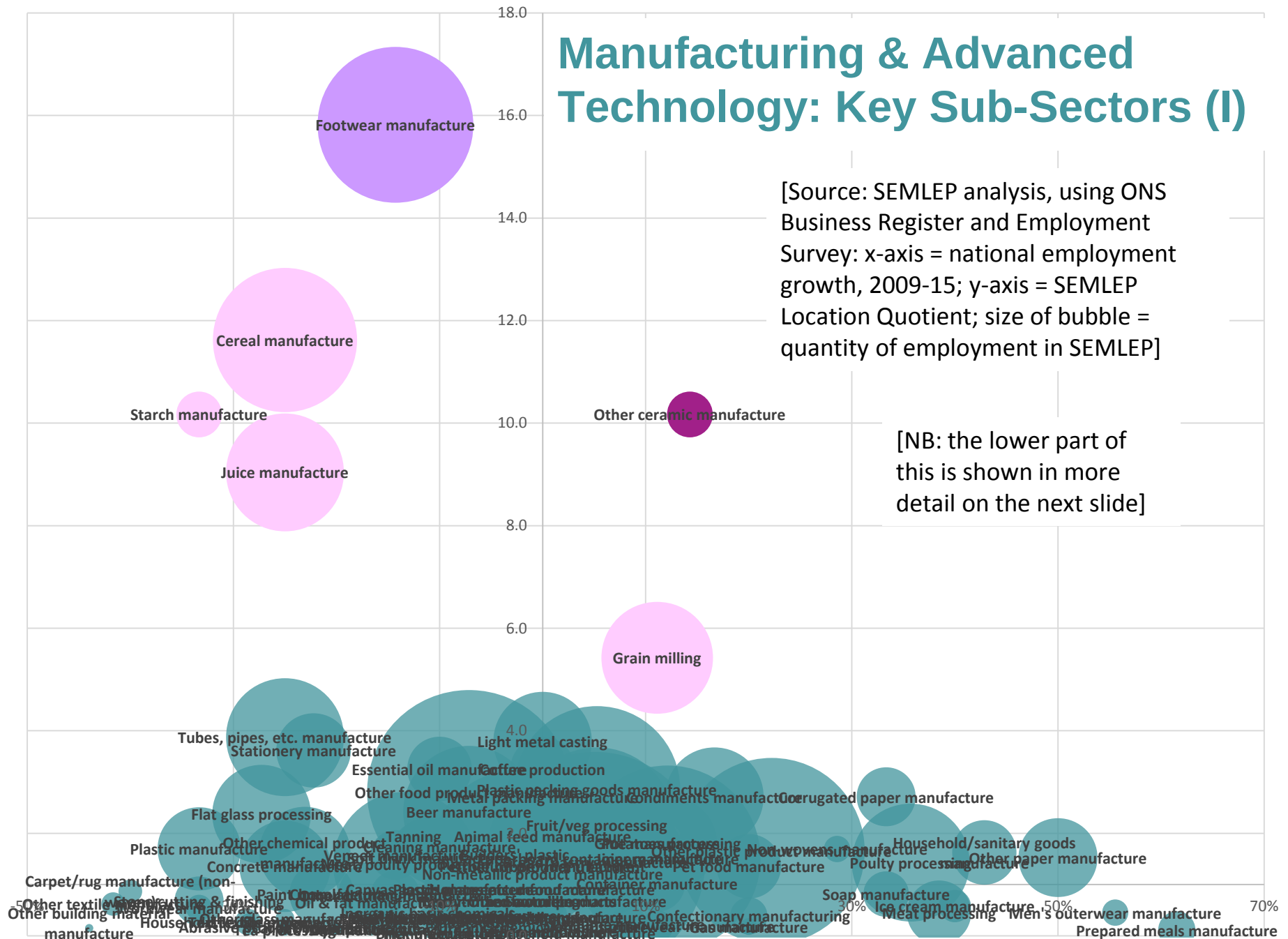
MAHLE Real Emissions Testing Centre,
Northampton



Manufacturing & Advanced Technology: Key Sub-Sectors (I)

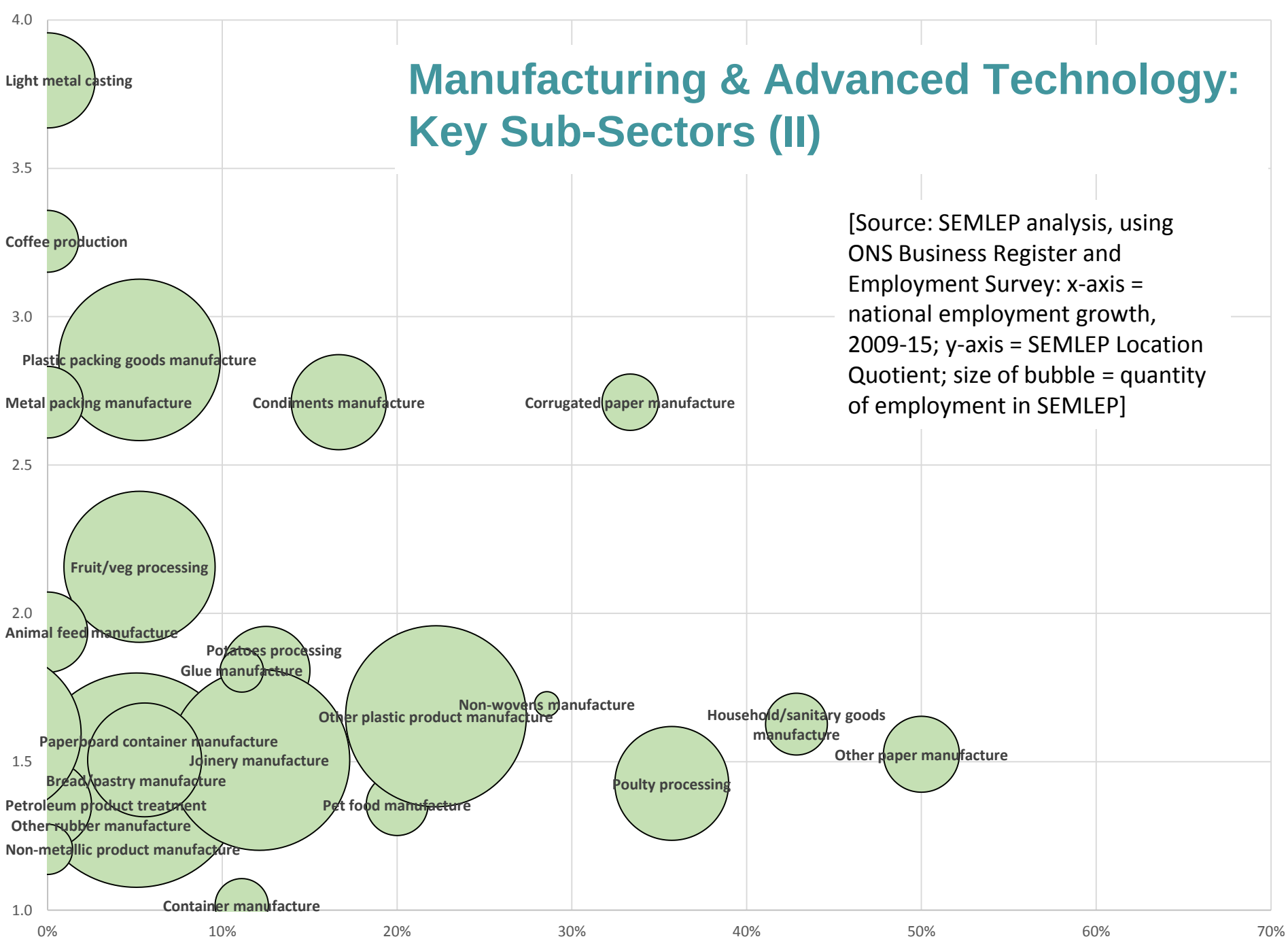
[Source: SEMLEP analysis, using ONS Business Register and Employment Survey: x-axis = national employment growth, 2009-15; y-axis = SEMLEP Location Quotient; size of bubble = quantity of employment in SEMLEP]

[NB: the lower part of this is shown in more detail on the next slide]



Manufacturing & Advanced Technology: Key Sub-Sectors (II)

[Source: SEMLEP analysis, using
ONS Business Register and
Employment Survey: x-axis =
national employment growth,
2009-15; y-axis = SEMLEP Location
Quotient; size of bubble = quantity
of employment in SEMLEP]



SEMLEP has a number of Food & Drink Innovation Assets...

- ▶ **Cranfield University:** research specialities include shelf life, mycology, post-harvest technology, contamination, nutrition and microbiology.
- ▶ **Colworth Park:** home to Unilever's Global Development Centre and R&D
- ▶ **Moulton College Food & Drink Innovation Centre** (supported by SEMLEP through £3.5m of LGF funding): up-to-date facilities and technology to deliver high quality skills development.
- ▶ **Aylesbury Woodlands** site of the Aylesbury Vale Enterprise Zone: agri-food and human health



Moulton College Food & Drink Innovation Centre

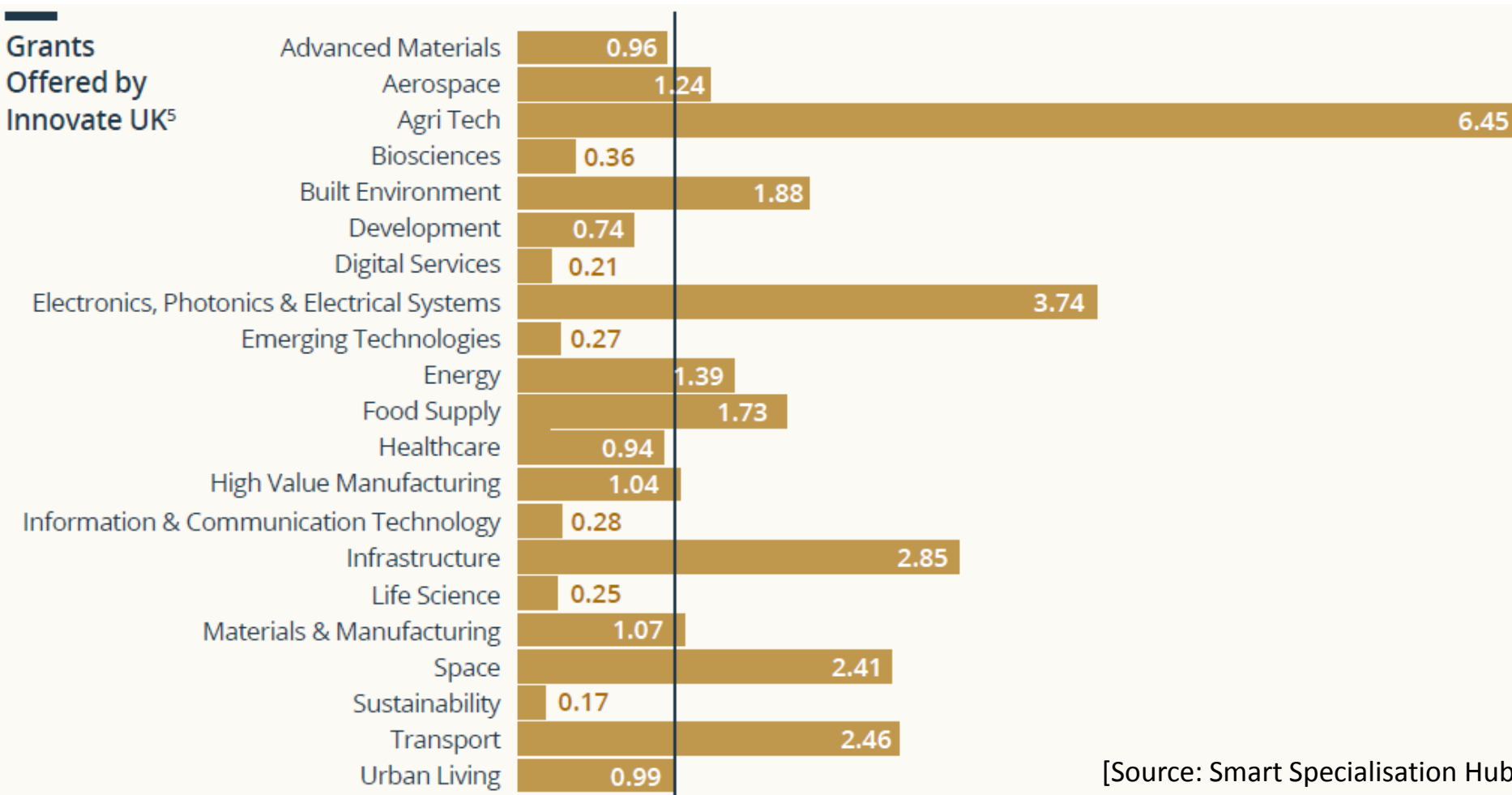
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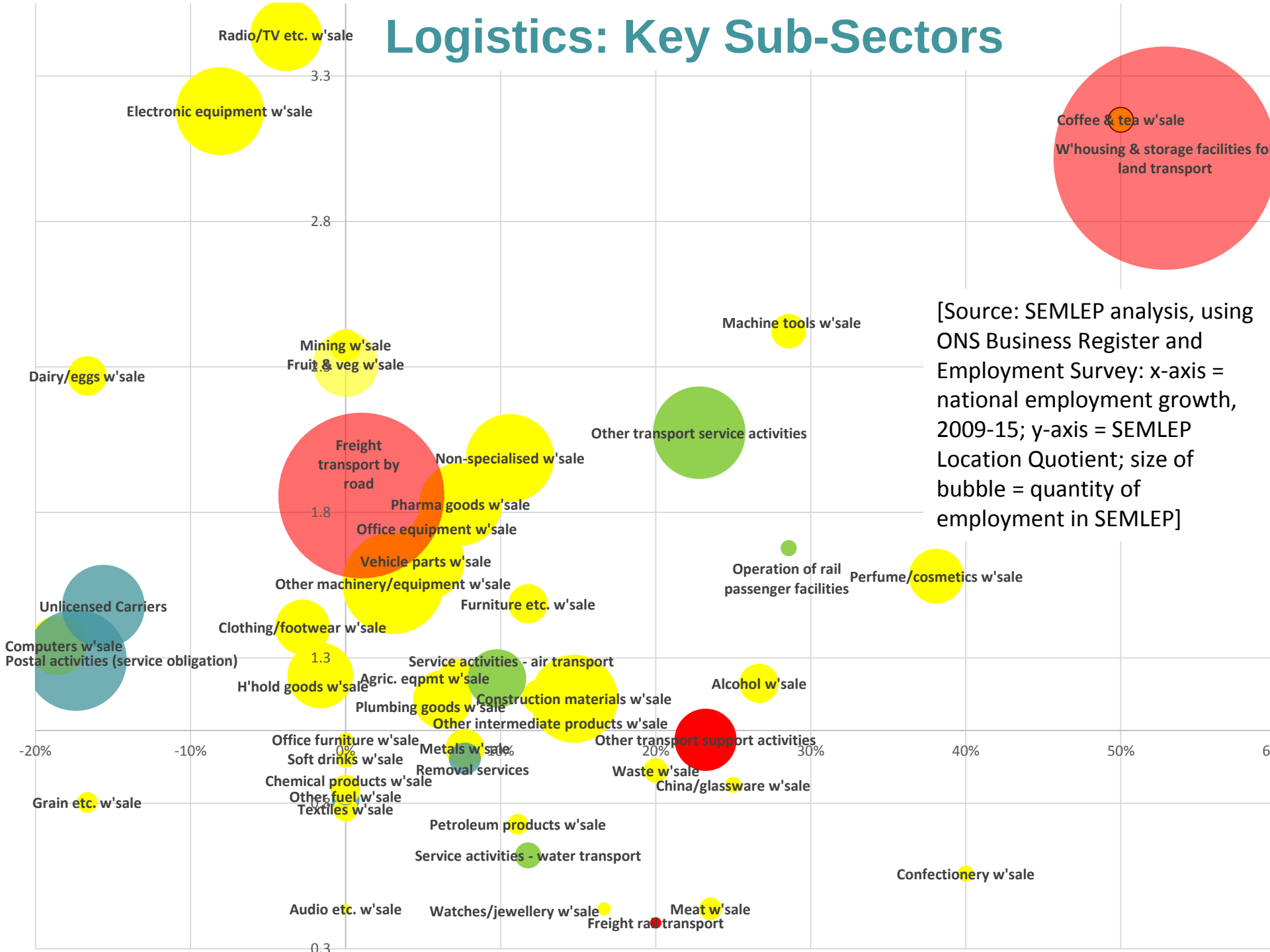
...and specialism within the Agri-Tech sector

Grants offered by Innovate UK: SEMLEP vis-à-vis other LEPs (Average=1)



[Source: Smart Specialisation Hub
LEP Profiles. Mar 2014-18 period.]

Logistics: Key Sub-Sectors





The Logistics sector is not as innovative as other parts of the SEMLEP economy

	Total	Creative and Cultural Sector	High Performance Technology Sector	Logistics	Manufacturing and Advanced Technology
Number of interviews (unweighted)	2,359	358	125	217	73
	%	%	%	%	%
Introduced new products, services, patents or processes in the last 12 months	25	28	17	13	13
Expect to introduce new products, services, patents or processes in the next 12 months	31	36	17	15	20
Links with universities or colleges for research and development purposes	8	9	6	3	7

[Source: SEMLEP 2017 Business Survey]

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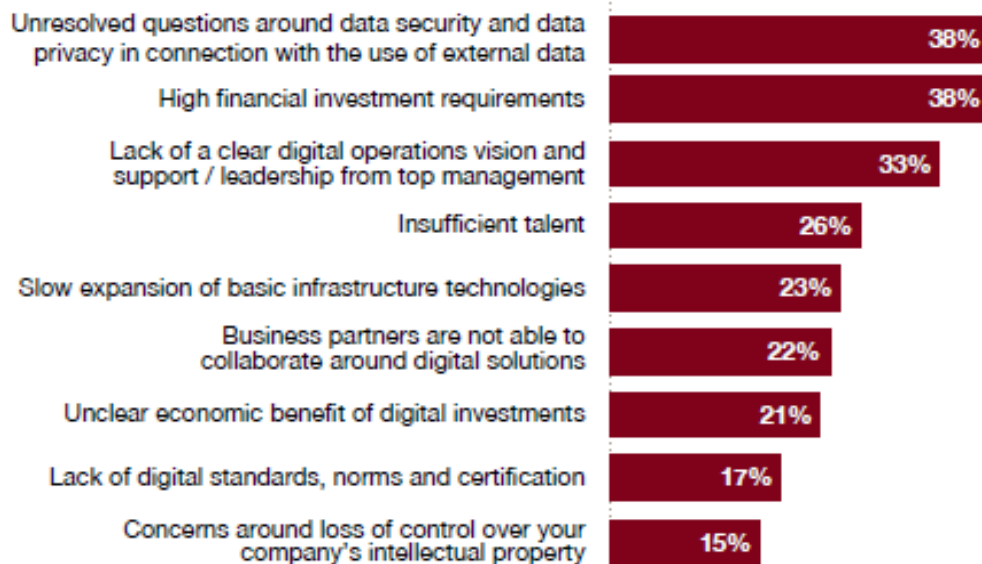


At the national level, the Logistics sector is facing a major challenge from a lack of digital culture & training

Q: What are the biggest challenges or inhibitors for building digital operations capabilities in your company?



Lack of digital culture and training



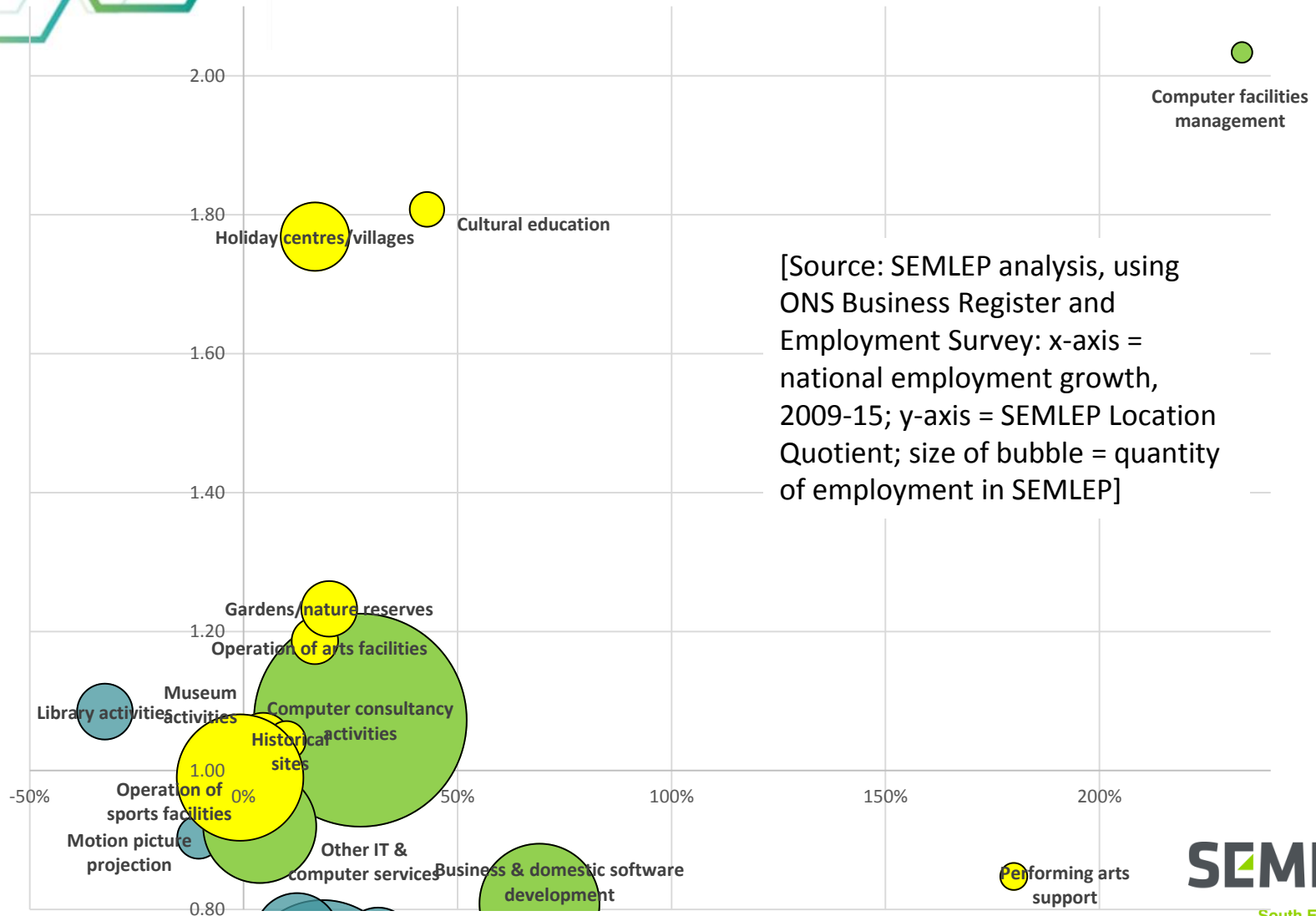
“The next few years will be critical: companies that don’t start soon [on investing in digital culture and training] risk being left behind permanently.”

[Source: PwC, (2016), *Shifting Patterns: The Future of the Logistics Industry*]

SEMLEP

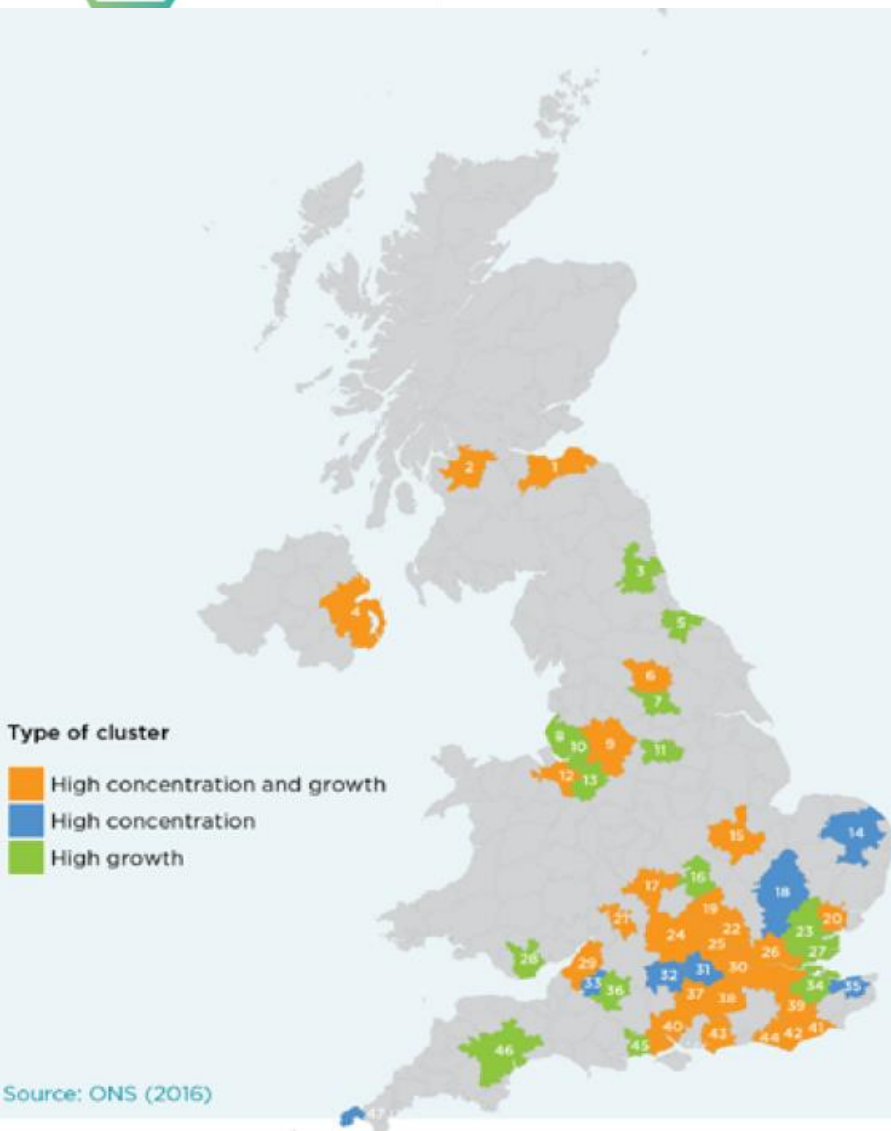
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Creative & Cultural: Key Sub-Sectors





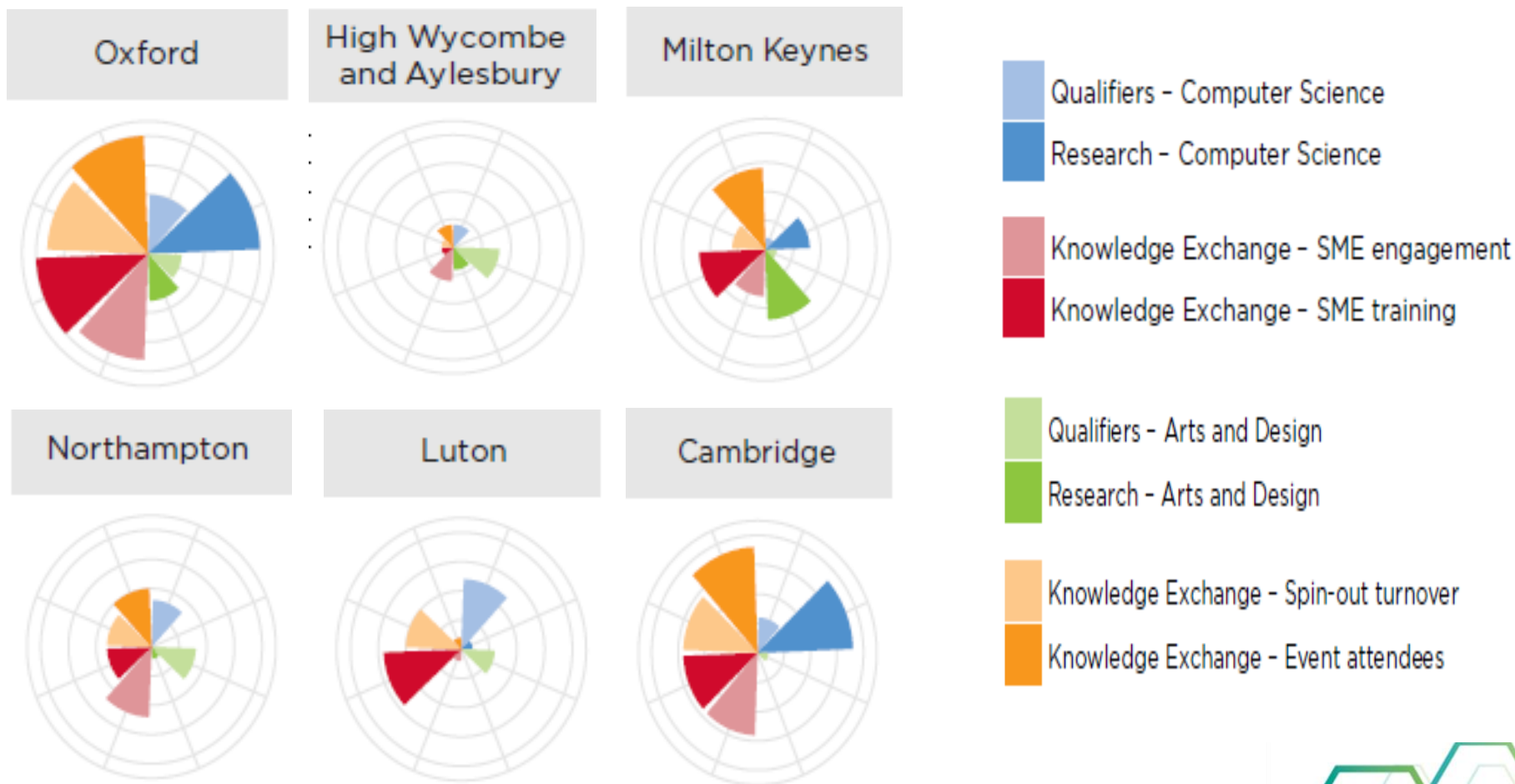
There are a number of Creative Clusters operating across the Growth Corridor



1	Edinburgh	25	High Wycombe and Aylesbury
2	Glasgow	26	London
3	Newcastle	27	Southend
4	Belfast	28	Cardiff
5	Middlesbrough and Stockton	29	Bristol
6	Harrogate	30	Slough and Heathrow
7	Leeds	31	Reading
8	Liverpool	32	Newbury
9	Manchester	33	Bath
10	Warrington and Wigan	34	Medway
11	Sheffield	35	Canterbury
12	Chester	36	Trowbridge
13	Crewe	37	Basingstoke
14	Norwich	38	Guildford and Aldershot
15	Peterborough	39	Tunbridge Wells
16	Northampton	40	Southampton
17	Leamington Spa	41	Hastings
18	Cambridge	42	Eastbourne
19	Milton Keynes	43	Chichester and Bognor Regis
20	Colchester	44	Brighton
21	Cheltenham	45	Bournemouth
22	Luton	46	Exeter
23	Chelmsford	47	Penzance
24	Oxford		

[Source: NESTA, (2016), *The Geography of Creativity in the UK*]

Across the Corridor, the SEMLEP area has relative strengths in computer science qualifications and arts & design

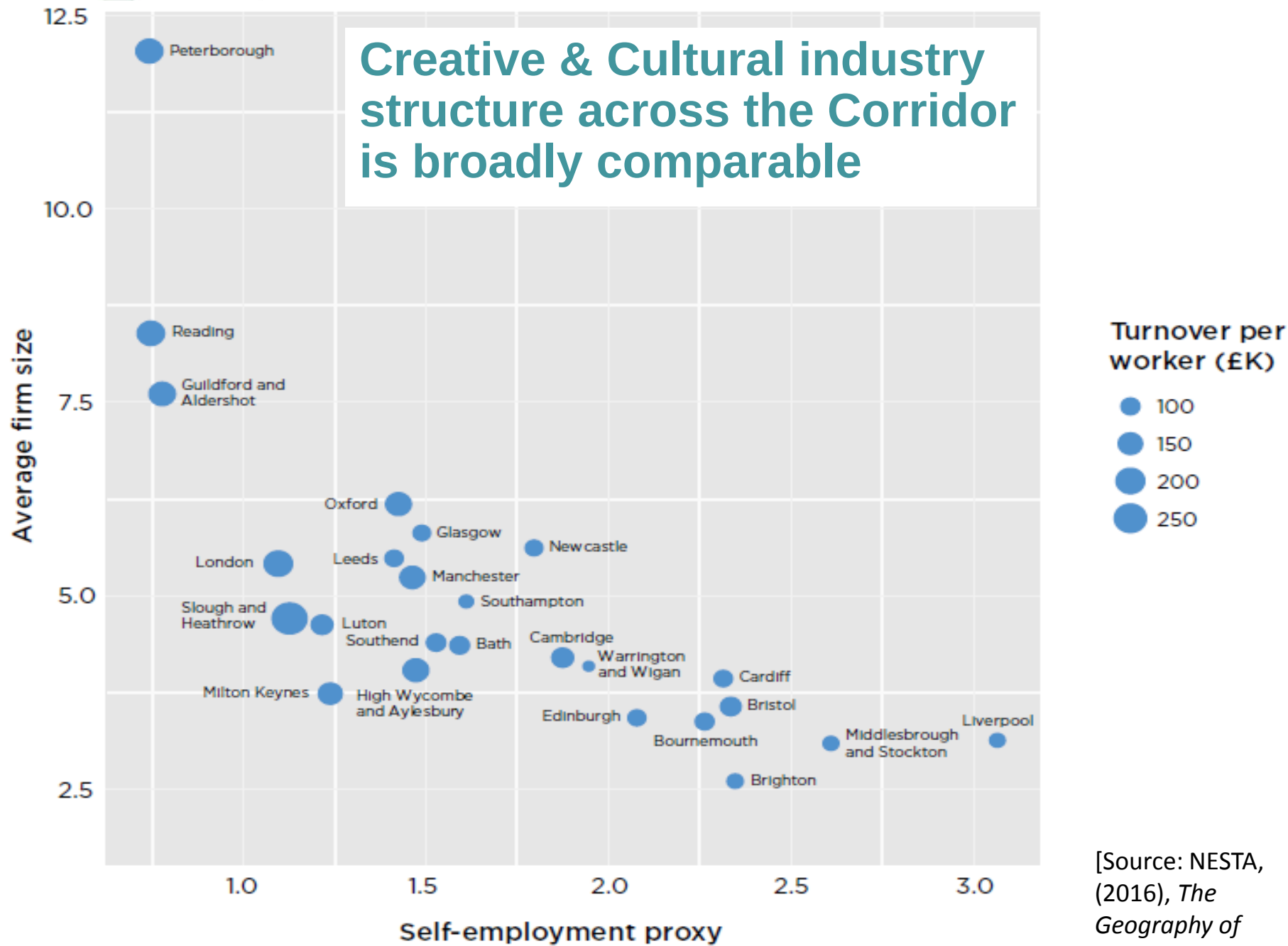


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[Source: NESTA, (2016), *The Geography of Creativity in the UK*]





[Source: NESTA, (2016), *The Geography of Creativity in the UK*]

These various industrial strengths are reflected in the Foreign Direct Investment realised within SEMLEP in 2017/18

- ▶ 69 successful FDI projects in SEMLEP in 2017/18
- ▶ 2094 new jobs created and 896 jobs safeguarded
- ▶ Plus 7 'multi-region' FDI projects

Key Sectors	Project #s
Electronics and communications	8
Automotive	7
Software and computer services	6
Food and drink	5



In addition to the Showcase Sectors, there are other sectors with high skills requirements

TRANSFORMATIONAL FOR GROWTH



High-Performance Technology



Advanced Manufacturing



Logistics & Supply Chain



Cultural & Creative

KEY SECTORS WITH GROWTH AND/OR HIGH REPLACEMENT NEED



Health & Social Care



Retail/Wholesale



Education



Business & Financial Services



Accommodation/Food



Construction



Current Business Constraints

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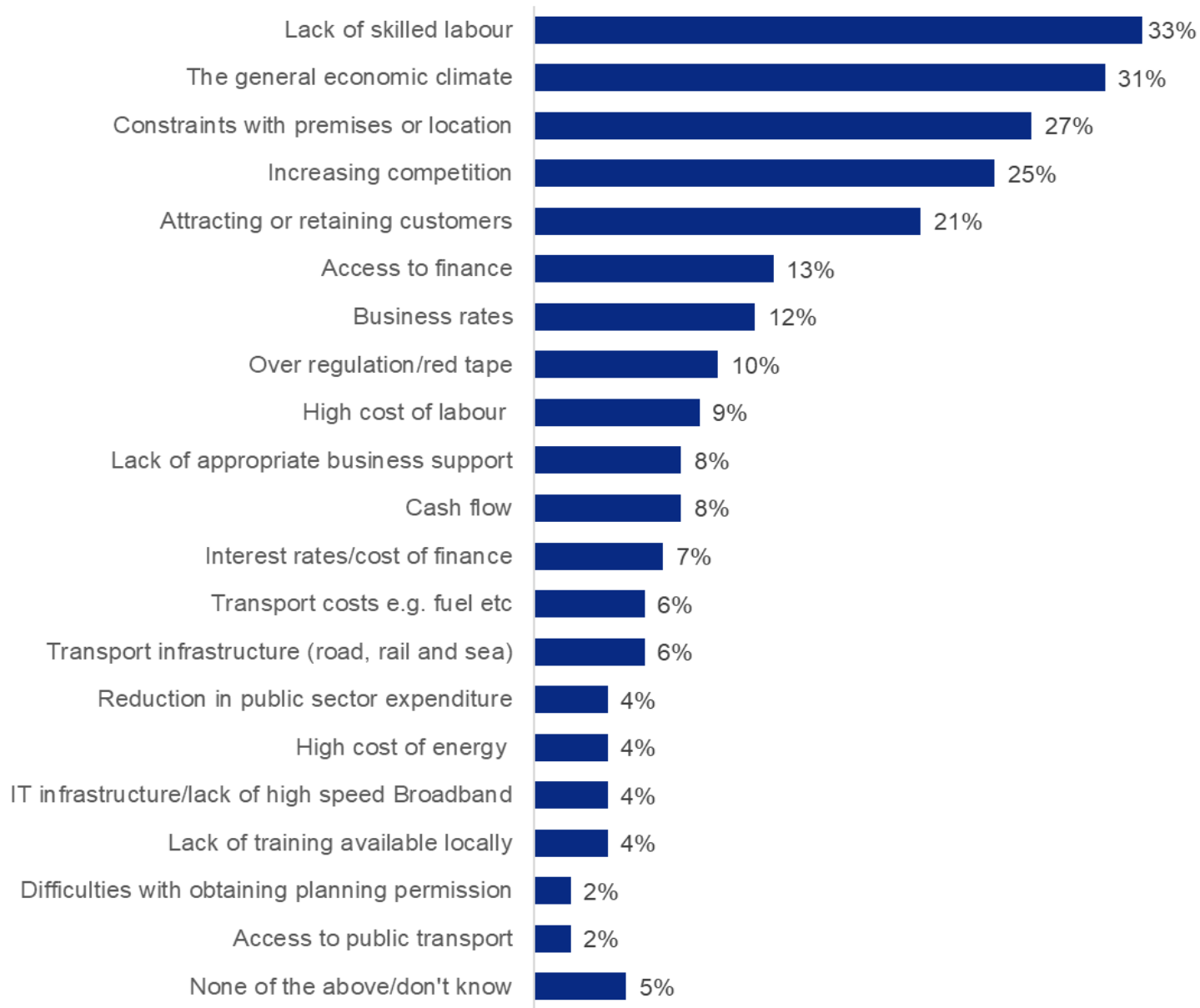


Skills and Premises both act as significant constraints on local business growth

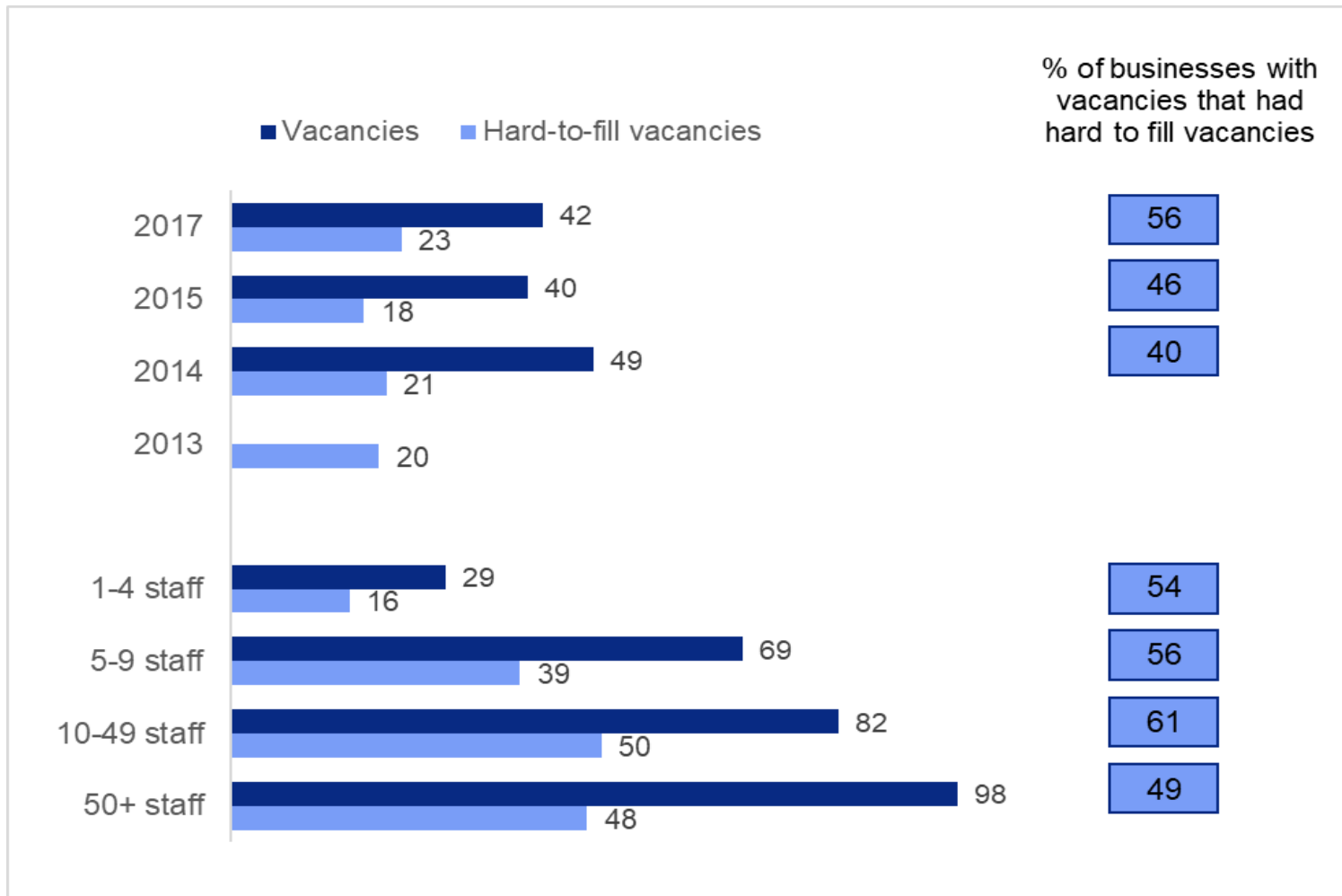
[Number of respondents: 2,353.]

Question asked:
What do you consider to be constraints on your business growth?
(Prompted list).]

[Source:
SEMLEP 2017
Business
Survey]



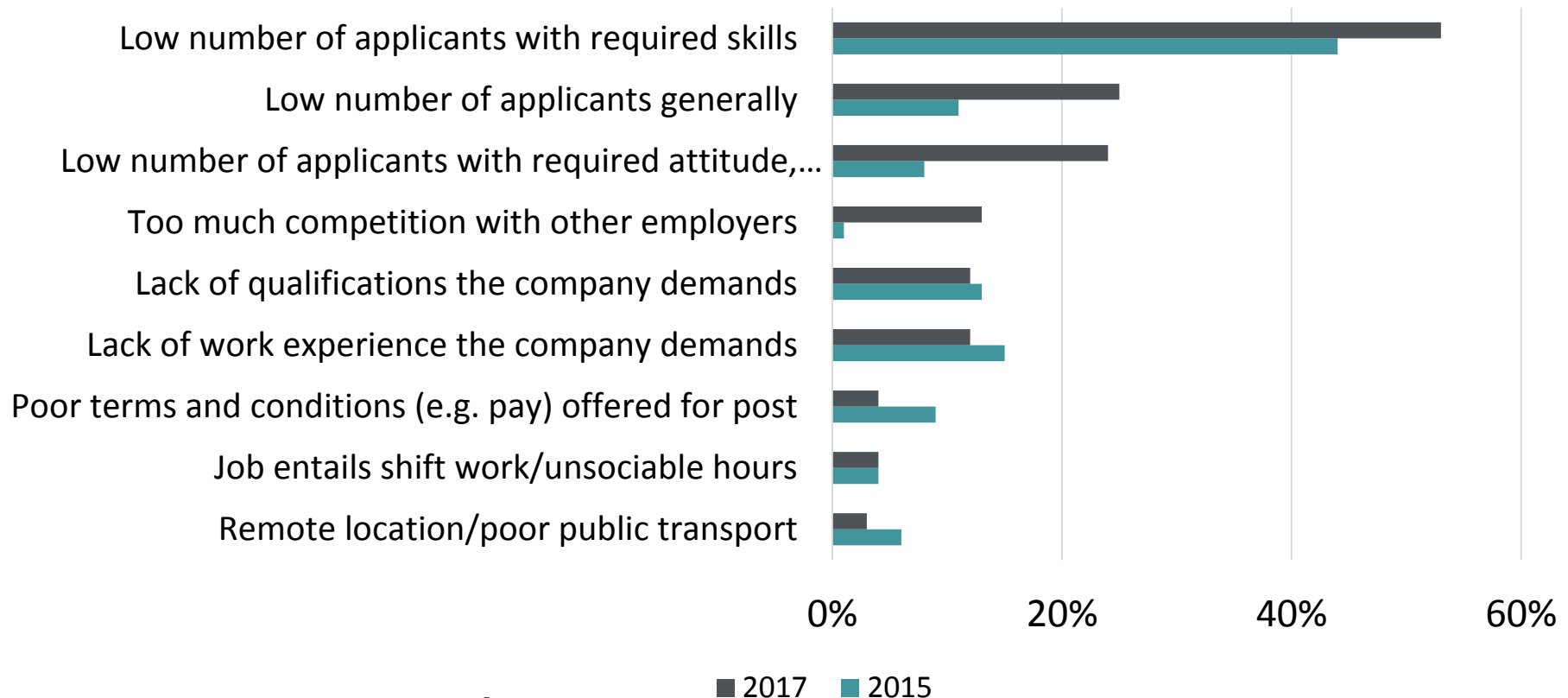
Skills shortages are a key business constraint in the SEMLEP area, particularly for SMEs (I)



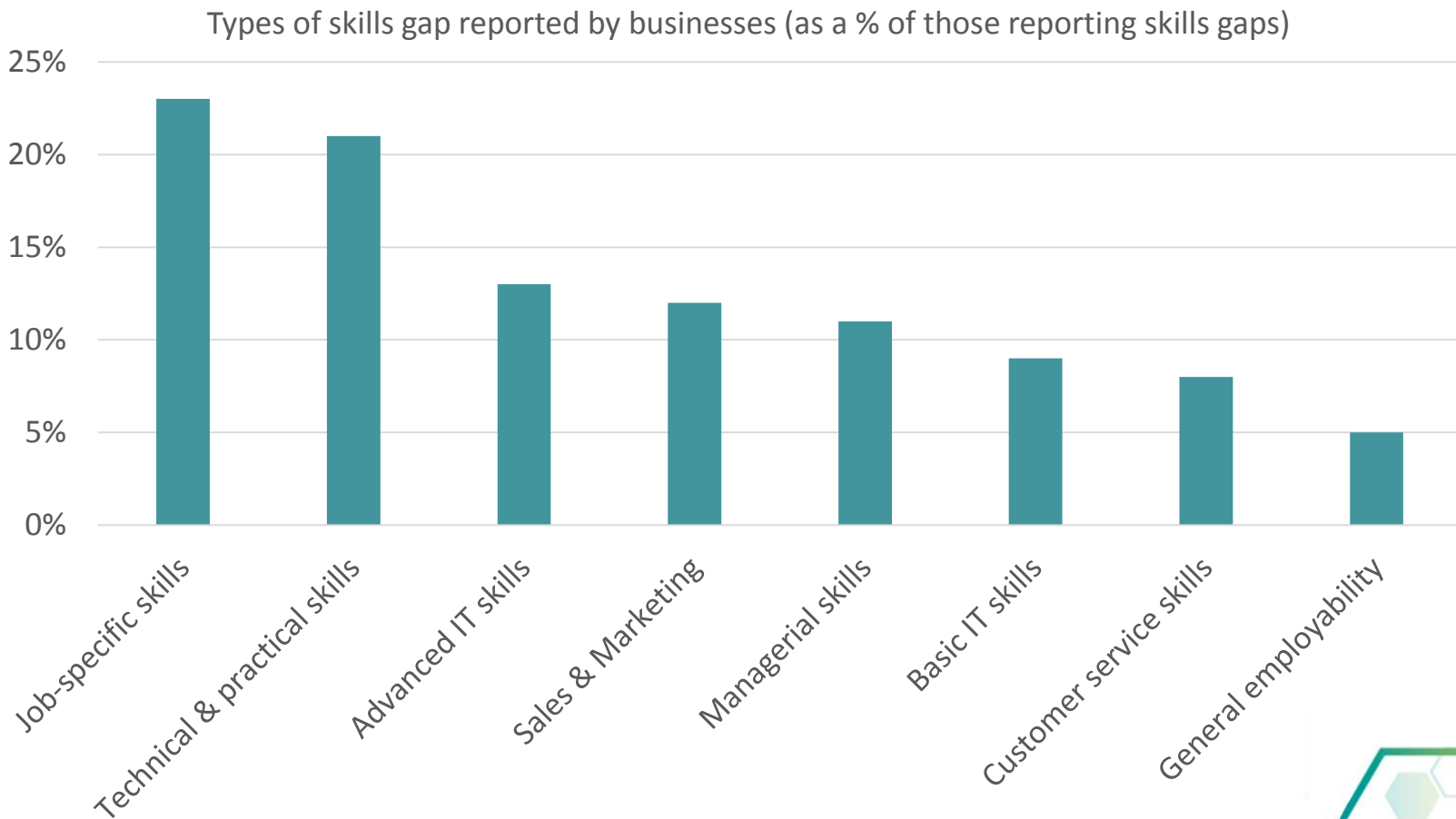
Skills shortages are a key business constraint in the SEMLEP area (II)

Of those businesses that had hard-to-fill vacancies in 2017, 85% attributed this to skills shortages

Reasons for having hard to fill vacancies



Within the existing workforce, businesses are most likely to report a lack of job-specific and technical and practical skills



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[Source: SEMLEP 2017 Business Survey]



A number of specific skills shortages by sector and occupation have been identified

Manufacturing	Transport & storage	Wholesale and retail trade	Construction	Information and communications	Accommodation and Food
Engineering and planning/process/production technicians	Skilled drivers	Mechanical technicians and maintenance	Electricians and electronic trades/technicians	IT engineers and technicians	Chefs
Metals, tools and instruments manufacturing	Manufacturing operatives	Manufacturing operatives	Plumbers and pipe fitters	Metals, tools and instruments manufacturing	Catering and bar managers
Electricians and electronic trades/technicians	Engineering and production technicians	Accountancy and finance technicians	Carpenters, joiners and craft woodworkers	Manufacturing operatives	Public services associate professionals
Manufacturing operatives	Accountancy and finance technicians	IT engineers and technicians	Bricklayers and masons	Accountancy and finance technicians	Electricians and electronic trades/technicians



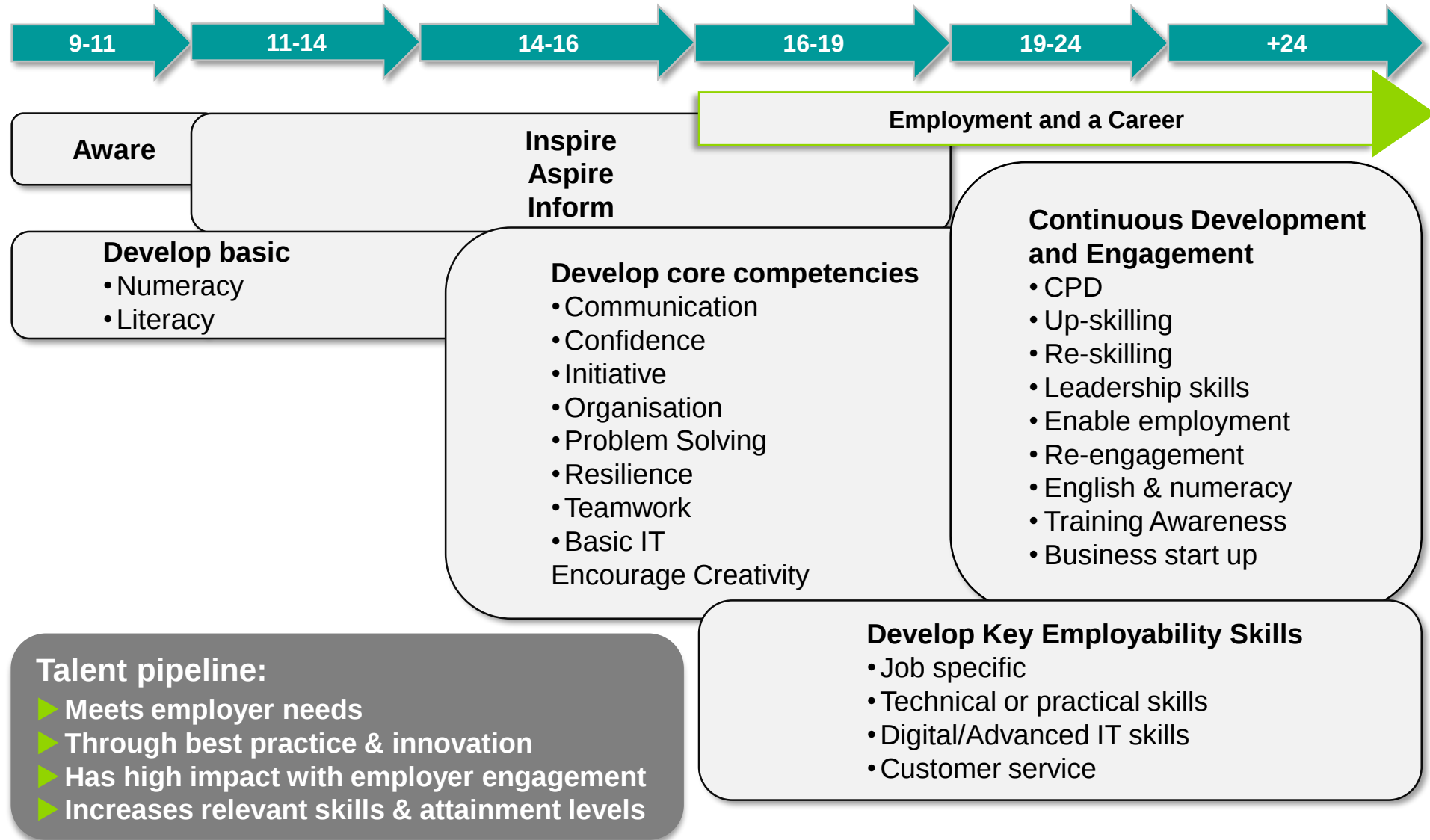
SEMLEP is taking four main courses of action to address these skills constraints...

► Four main courses of action – **employer-led approach:**

- Improving Labour Market Information.
- Increasing employer engagement with schools and colleges.
- LGF investment.
- Support for people into and within employment (tackle employment barriers; upskilling; reskilling)



...with the aim of supporting life-long skills development

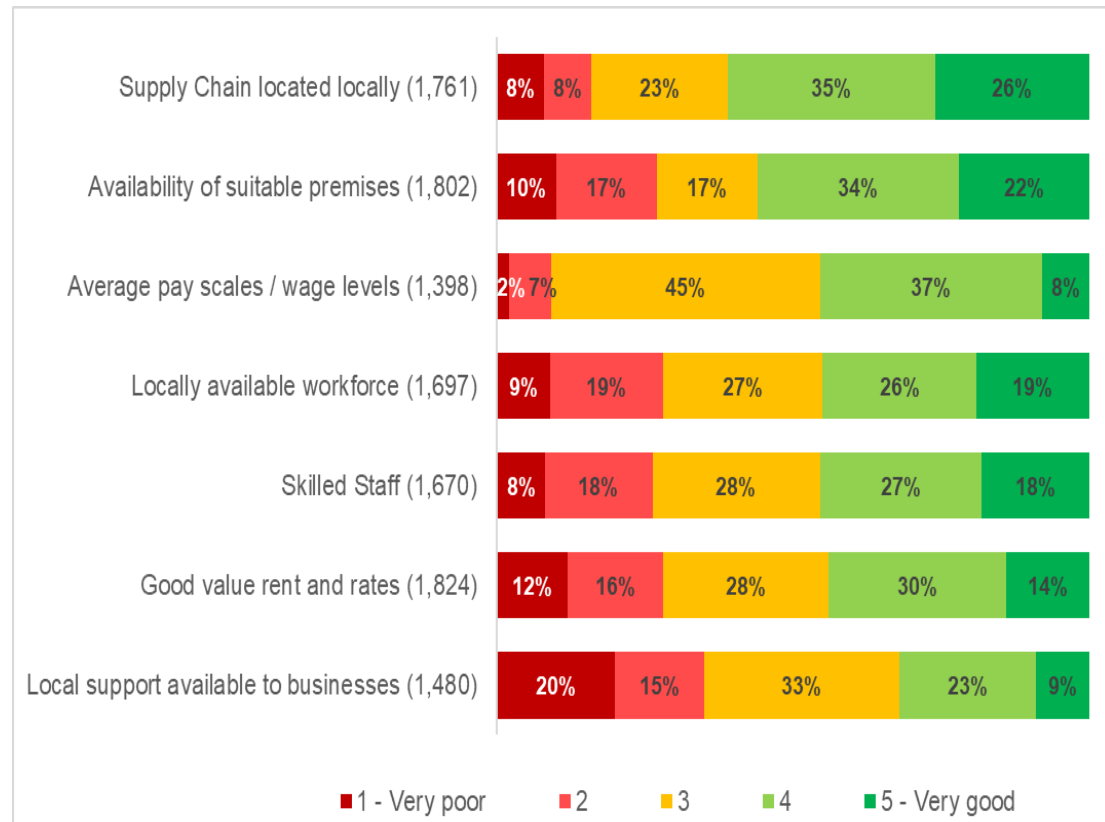




The availability of suitable premises in the SEMLEP area is not rated well by smaller businesses

The availability of suitable premises was rated well overall, although it is worth noting that this view was not shared by businesses with 5-9 staff, where just 38% said availability of suitable premises was good and almost as many (32%) rated it as poor.

This suggests that there may be a gap in the provision of premises suitable for these small businesses. This group of businesses were also the least satisfied with the value of the rent and rates (32%, compared to 44% overall)

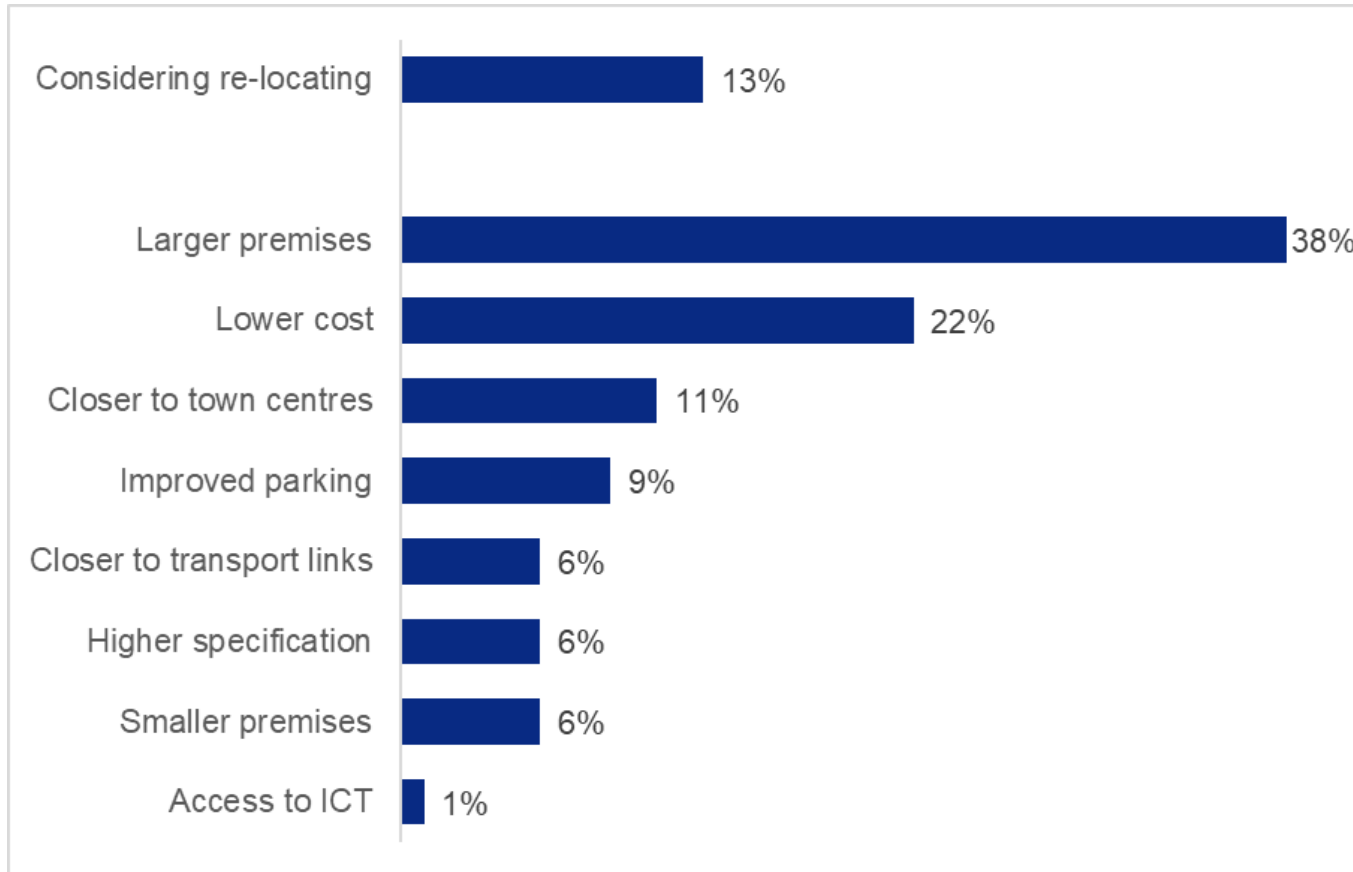


[Source: SEMLEP 2017 Business Survey]

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The most common reason for considering relocation is to move to larger premises



[Source: SEMLEP 2017 Business Survey]

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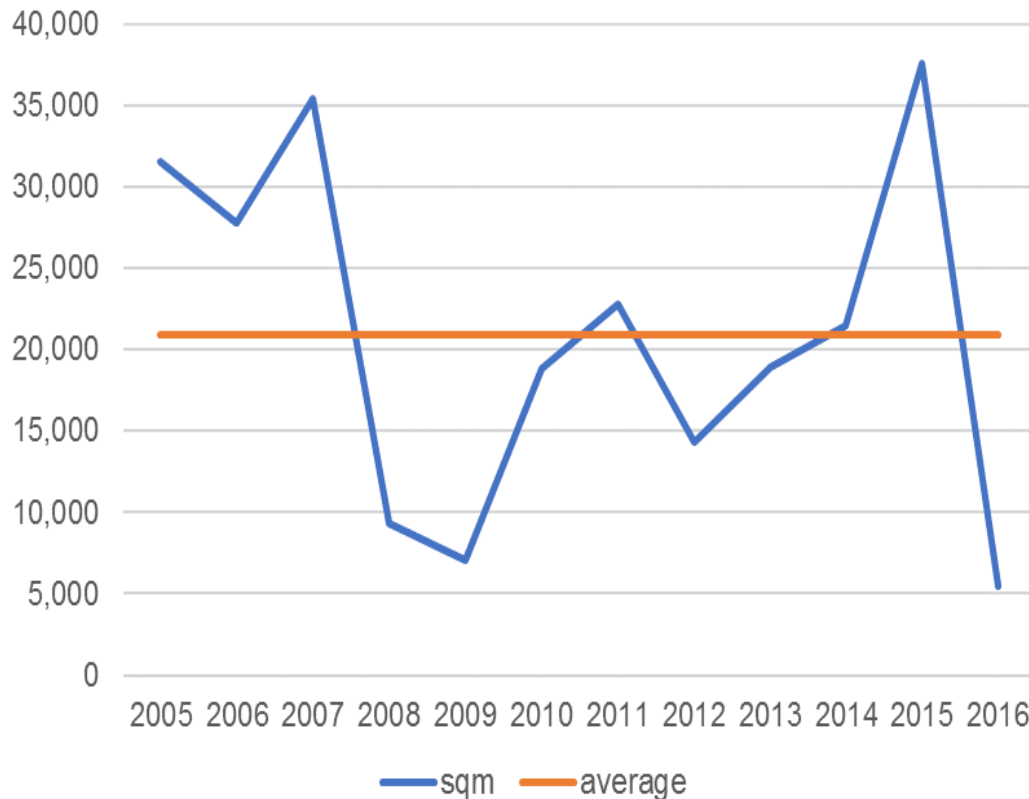
[Number of respondents: 2364 / 305.

Questions asked: Are you thinking of relocating your business? /
Why are you thinking of relocating?]



In Daventry, analysis suggests there is a significant undersupply of small to medium industrial units...

Take-up of industrial units up to 10,000 sqm, Daventry, 2005-16 (sqm)



In 2016, take-up in this section of the market decoupled from the economic cycle. Alongside this:

- ▶ The stock of floorspace has remained virtually unchanged between 2005-16.
- ▶ Vacancy rates are very low.
- ▶ There is significant frustrated demand in the market (estimated at 25,000 sqm).

This suggests that the recent downturn in take-up in Daventry is explained by a supply constraint.



...and that public sector intervention is likely to be needed to realise greater supply

Analysis in Daventry has concluded that, to close the gap between demand and supply, additional land should be provided for industrial development, but that development of small to medium industrial units will only happen if:

- ▶ the land is reserved for small-to-medium units; if it is released for industrial development without this restriction, land is likely to be taken up for large-scale warehousing, which generates higher land values (smaller units are more expensive to build and manage).
- ▶ the investment case for such units can be proven. “At current rents development of small-to-medium industrial development is only marginally viable in Daventry, because in the absence of new development rents have stagnated. Once new units are built we would expect them to let at higher rents, so that development becomes viable and there is comparable evidence to improve investor confidence and encourage further investment.”

Interventions could include:

- ▶ advance-funding of infrastructure to create serviced plots; and
- ▶ forward funding of private sector developments through sale and leaseback.



Other areas within SEMLEP are experiencing similar issues...

- ▶ South Northamptonshire recently conducted an audit of its 66 Business Parks and found the vacancy rate was very low, and occupancy high. [Source: South Northamptonshire]
- ▶ Analysis for the Corby Employment Land Review found that smaller employment units, of up to 5,000 sq ft, are often in poor condition and nearing the end of their economic life, and concluded that, “in the short to medium term they should be protected, because they already have the lowest vacancy of any unit sizes, but are not viable to redevelop. Therefore, if such units are lost there will be no alternatives for occupiers.” [Source: Corby Employment Land Review].



..and employment land analysis suggests that these issues are set to become more acute over time

Office Provision

- ▶ “The overall trend for office property shows demand growing at a faster rate than supply. On past trends, we would expect demand to exceed total supply in the next five to ten years. This trend is more acute around Cambridge, the M1/ M11/M25 intersection settlements and around the Northampton, Bedford and Milton Keynes area.”

Industrial & Warehousing Provision

- ▶ “On current projections demand for industrial and warehousing property in the corridor exceeds supply in the next three to eight years. This is most acute along the M11 and M1 corridors where demand has grown strongly over the past two years.”



Moreover, SEMLEP stakeholders frequently highlight that there is insufficient commercial property to service investment enquiries

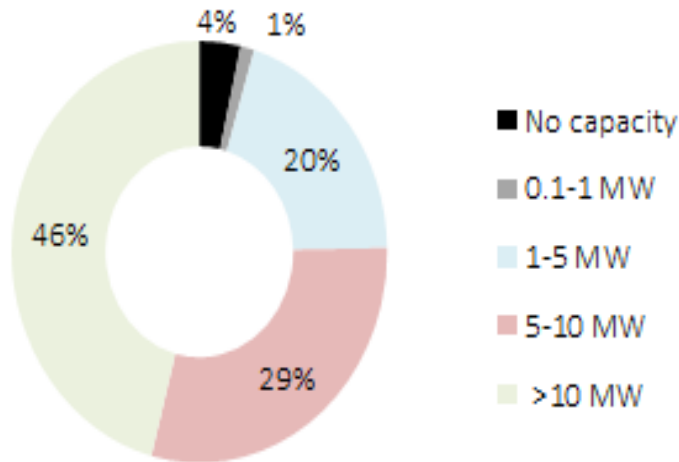
SEMLEP Inward Investment Group: “there is a lack of new and even second hand commercial property with which to service enquiries. Investment is being lost and interest unfulfilled without options to propose. In particular, the market is not delivering speculative property supply for grade A premises which could accommodate businesses in some of the SEMLEP Showcase sectors.”

This was identified as a key issue and it was concluded that a need for funding should be communicated through the LIS process.

Food & Drink LEP Network: “there is a lack of food grade, business ready space for businesses to move into. There is a huge growth of SMEs but they are struggling to find the right premises.”

We also know that there are issues around electricity capacity for businesses in certain areas...

Capacity



(a)

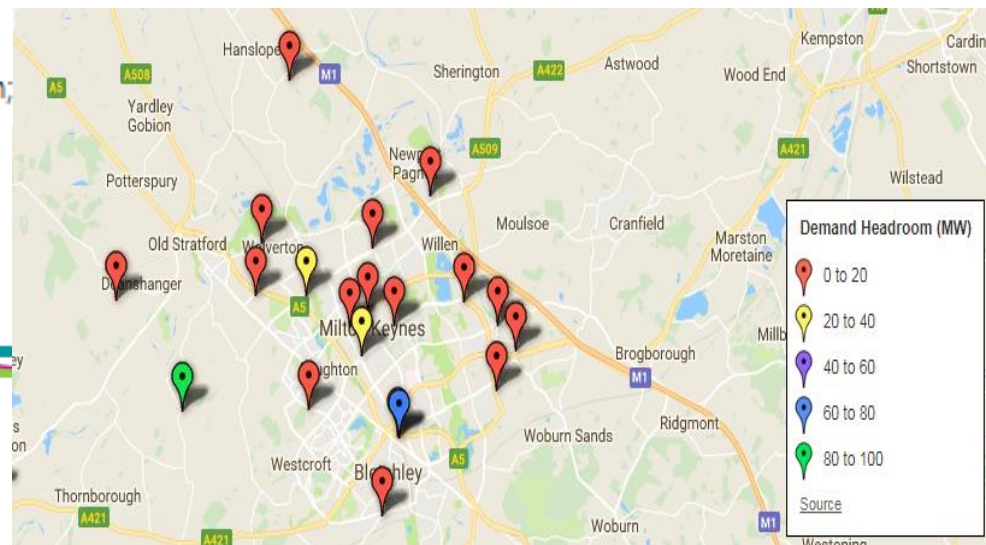
Figure 4: Substation headroom in WPD area: (a) demand headroom;

[Source: National Energy Foundation analysis for SEMLEP, using Western Power data]

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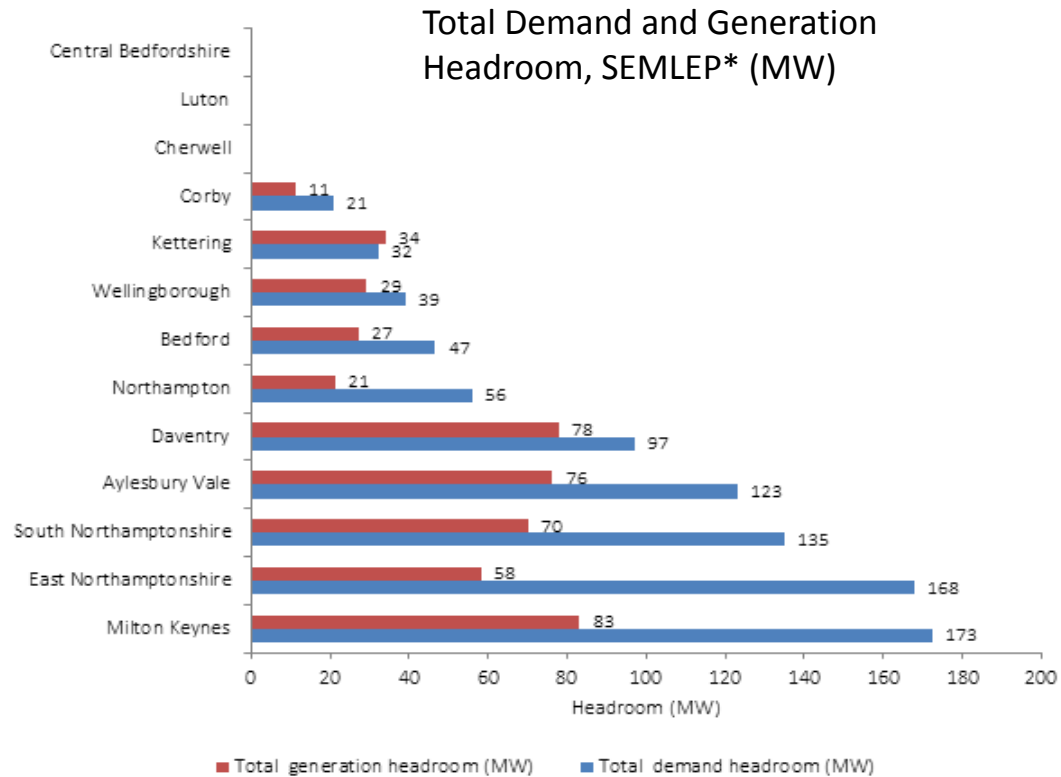
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- ▶ Grid capacity is constrained in certain areas.
- ▶ 5% of the WPD network has zero or little headroom.
- ▶ 20% of substations have demand headroom of less than 5MW.
- ▶ These constraints are already impacting upon individual cases of business expansion and/or investment.



...and that these issues will become more acute if future high growth is realised in the area

- ▶ The overall spare capacity available in SEMLEP amounts to 911MW, which is around 24% of current network capacity.
- ▶ Across the region as a whole, this represents a relatively healthy position in terms of providing for traditional, incremental growth.
- ▶ However, if higher levels of growth/ major new development is to be realised electricity capacity constraints are likely to be a key issue.
- ▶ The picture is similar when it comes to 'headroom' capacity for connecting distributed generation which, at 500MW for the SEMLEP area, is around half of what has already been installed: a healthy position for incremental growth, but not for major growth.



*NB: No data available for Central Bedfordshire, Luton & Cherwell

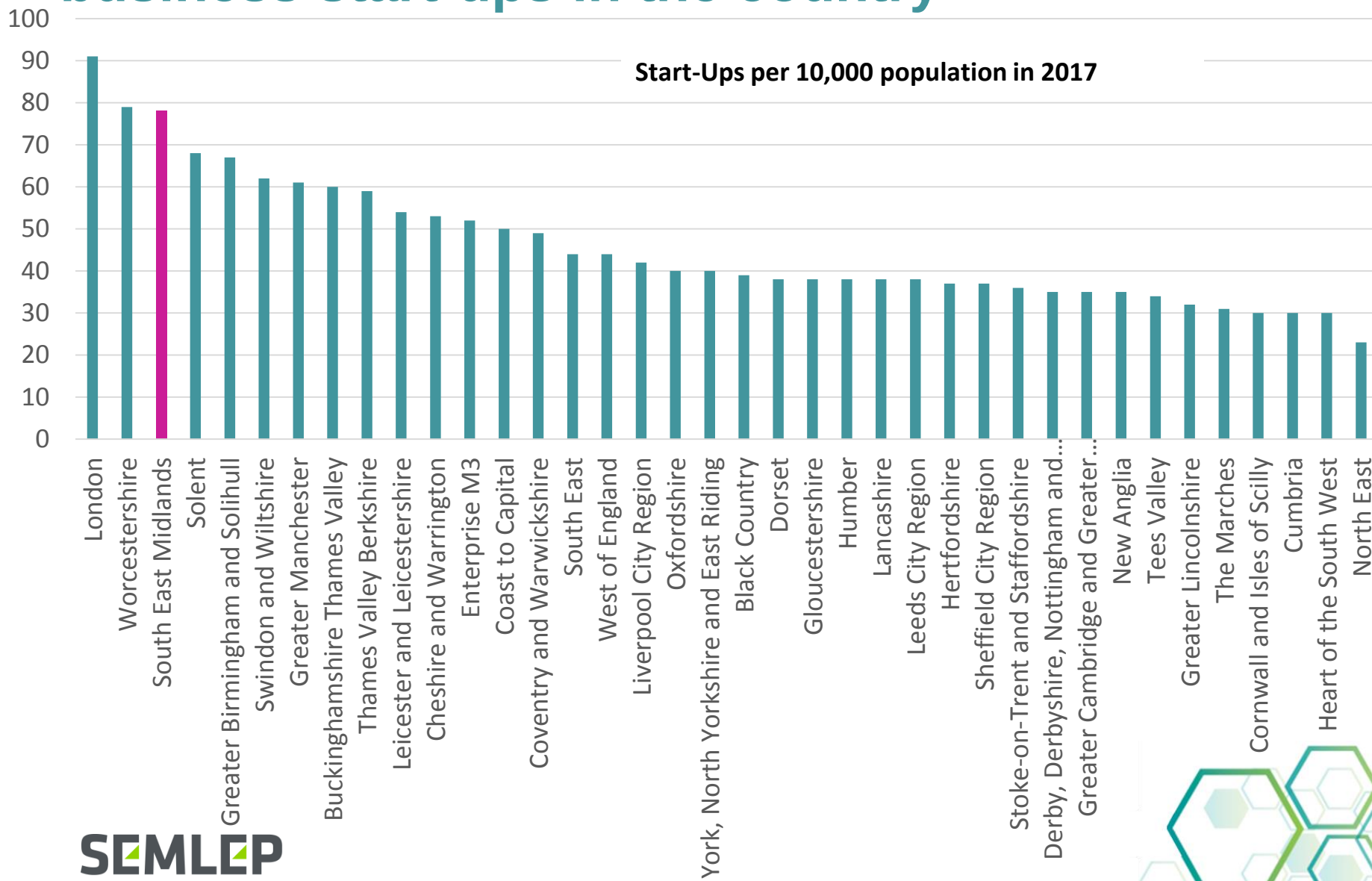
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[Source: National Energy Foundation analysis for SEMLEP,
using Western Power data]



SEMLEP has one of the strongest rates of business start-ups in the country



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[Source: Enterprise Research Centre, (2018), UK Local Growth Dashboard]



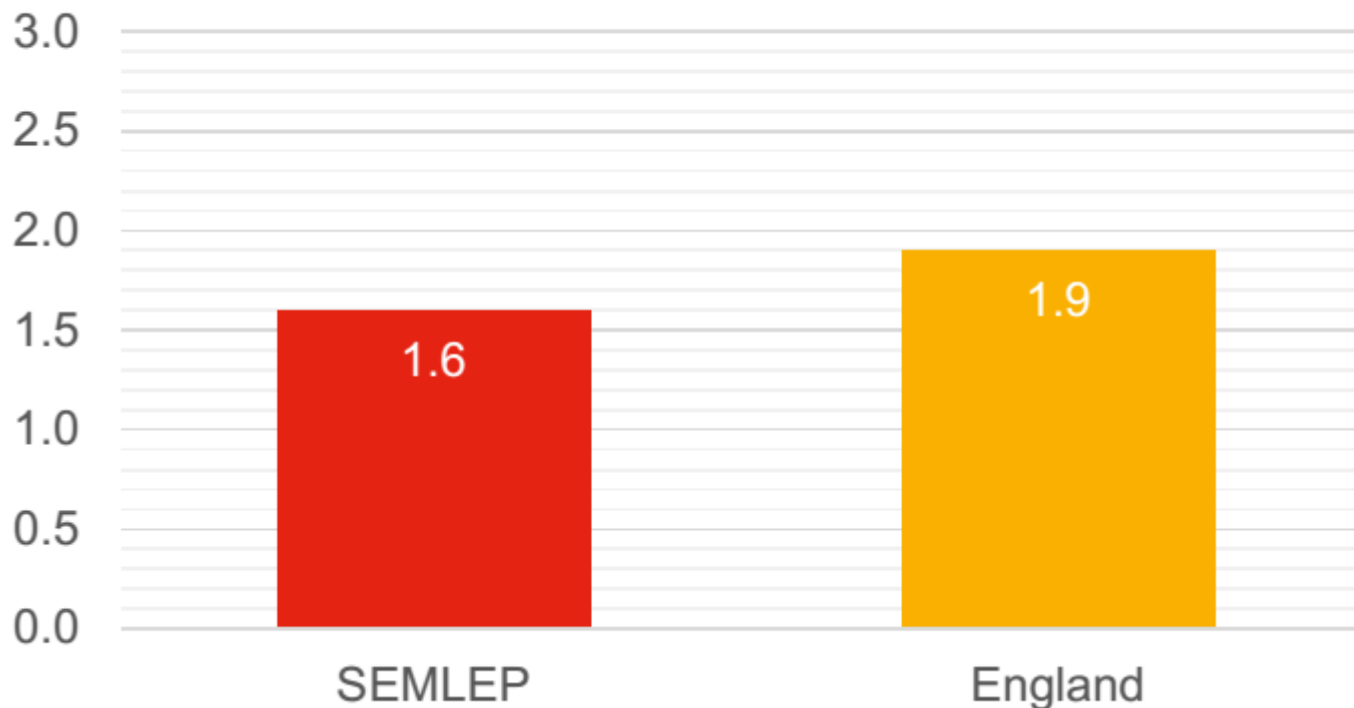
It contains two of the top ten cities in the UK for start-ups

Rank	City	Business start-ups per 10,000 population, 2016	Business closures per 10,000 population, 2016	Churn rate*
10 cities with the highest start-up rate				
1	London	112.3	90.7	3.8
2	Slough	82.9	56.7	6.5
3	Milton Keynes	80.7	62.0	4.0
4	Manchester	78.1	53.2	6.8
5	Northampton	74.3	64.3	2.5
6	Reading	73.5	60.5	2.7
7	Southampton	70.3	52.0	5.5
8	Brighton	69.3	59.3	2.2
9	Basildon	68.2	49.1	4.8
10	Peterborough	65.4	43.1	6.6



But, while strong on start-ups, SEMLEP is a 'cold spot' for 'scale-ups'

Start-ups Scaling <£500k to £1m + in 3 years 2014-17 (%)



In its 2017 Scale-Up Review, the Scale-Up Institute identified SEMLEP as one of nine scale-up 'cold spots' requiring particular attention.

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[Source: Enterprise Research Centre, (2018), UK Local Growth Dashboard]



Scale-Up has been identified as a particular issue for the High-Tech Cluster

“For the cluster to realise its potential in the ambit of high performance technology, there needs to be a continuing flow of entrepreneurial new firms; but in addition, more businesses must grow to medium size and beyond.”

5 Broad Priorities for Action

- i) Growth Finance
- ii) Building Leadership Capability
- iii) Routes to Market, and Visibility
- iv) Skills
- v) Infrastructure Provision



Access to skills is a barrier to scale-up across the Growth Corridor

Scale-Up Institute's Assessment of the top three barriers to scale-up in each part of the Growth Corridor



TALENT AND SKILLS

Access to the talent you can hire who can do the jobs you have available



ACCESS TO FINANCE

Access to private equity (eg from Venture Capital)



LEADERSHIP

Leadership development: training and developing the people you have

Oxfordshire



TALENT AND SKILLS

Access to the talent you can hire who can do the jobs you have available



ACCESS TO MARKETS

Access to markets and customers in the UK

Access to markets and customers internationally

Bucks



TALENT AND SKILLS

Access to the talent you can hire who can do the jobs you have available



ACCESS TO MARKETS

Access to markets and customers in the UK

Access to larger corporates in supply chains

SEMLEP



TALENT AND SKILLS

Access to the talent you can hire who can do the jobs you have available



ACCESS TO FINANCE

Access to the right finance for the business (including debt finance, bank loans, credit cards, overdrafts)



ACCESS TO MARKETS

Access to markets and customers in the UK

GCGP

Scaleups also want new programmes to complement existing provision for key areas, such as:

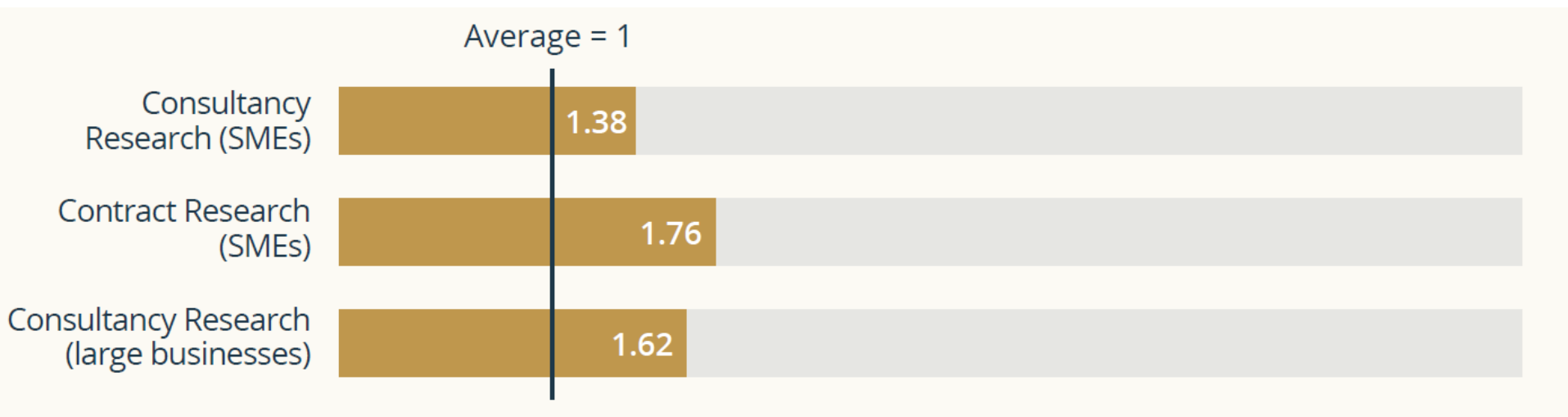
- Overcoming barriers to accessing talent and skills, and finance.
- Better signposting to finance and investment sources, writing applications, and raising the profile of investing to scale.
- Accessing incubator and accelerator programmes across the region, with many businesses unaware of their eligibility for programmes available.

SEMLEP is focused on meeting these needs through their scaleup provision.

[Source: Scale-Up Institute, (2017), Annual Scale-Up Review]

SEMLEP compares favourably with other LEPs on interactions between HE Institutions and Business

Interaction between HE Institutions and Business,
SEMLEP vis-à-vis other LEPs



SEMLEP

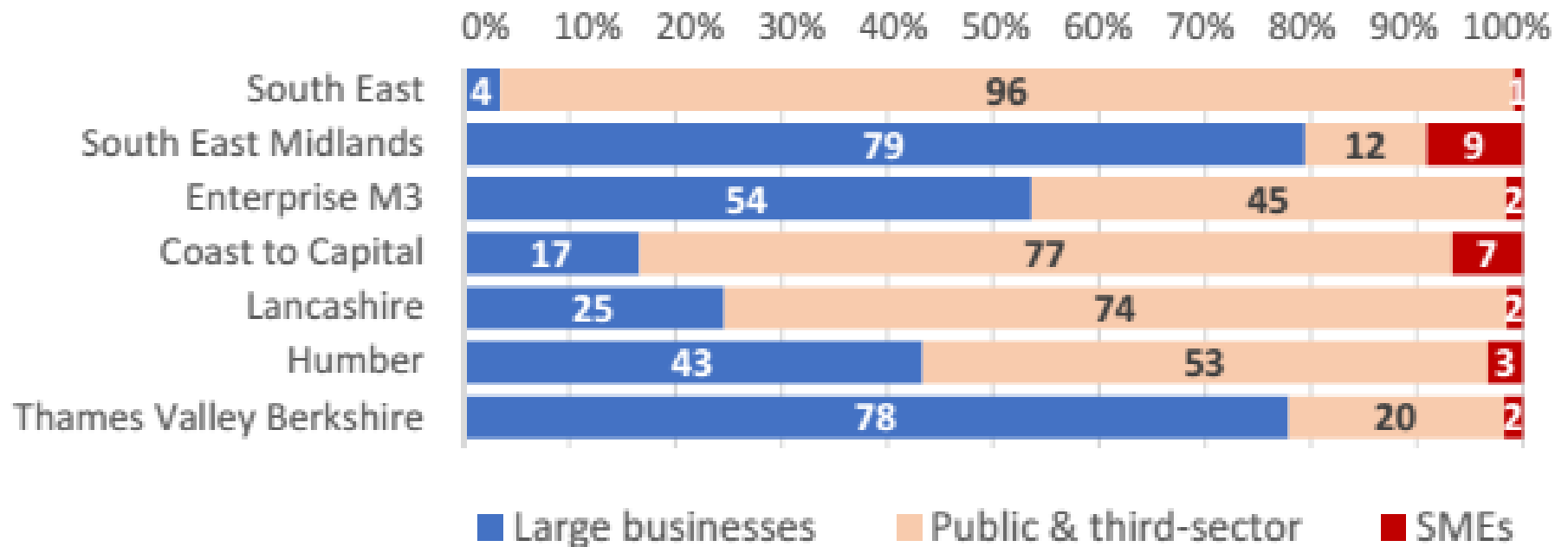
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[Source: Smart Specialisation Hub LEP Profiles]



However, there is still room for improvement, particularly in terms of interaction between HE Institutions and SMEs

Contract Research – annual average 2010/11-2012/13 – % split in income: 'large businesses', 'public & third sector' and SMEs



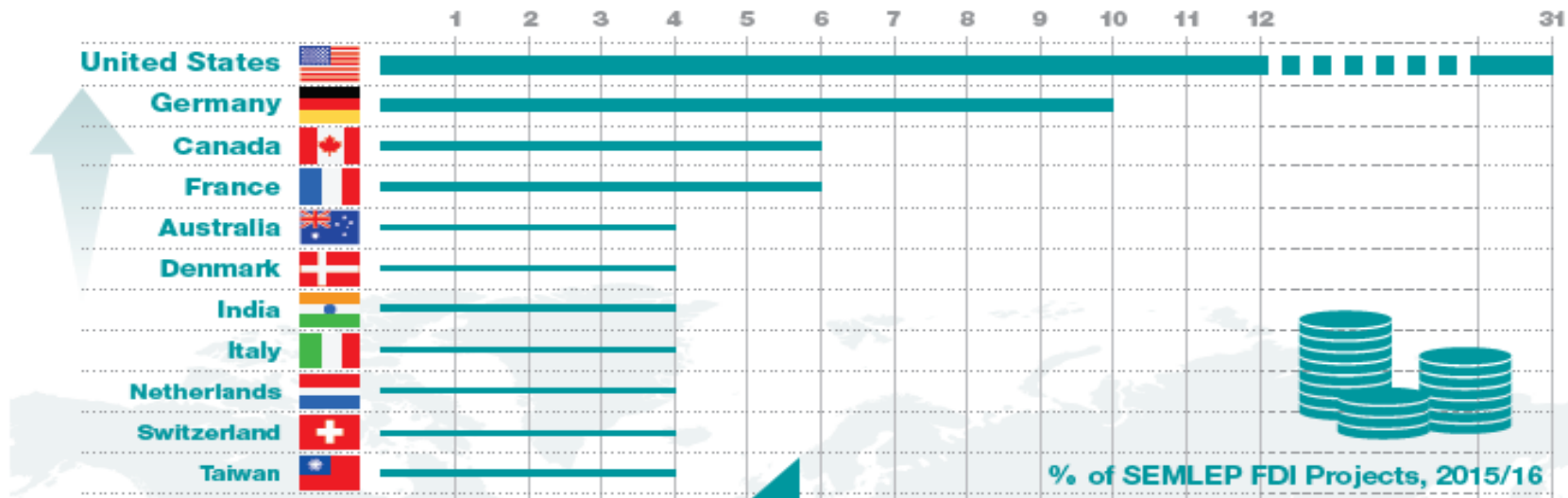
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[Source: BEIS, (2015), *Mapping Local Comparative Advantages in Innovation*.
Annual average 2010/11-2012/13]



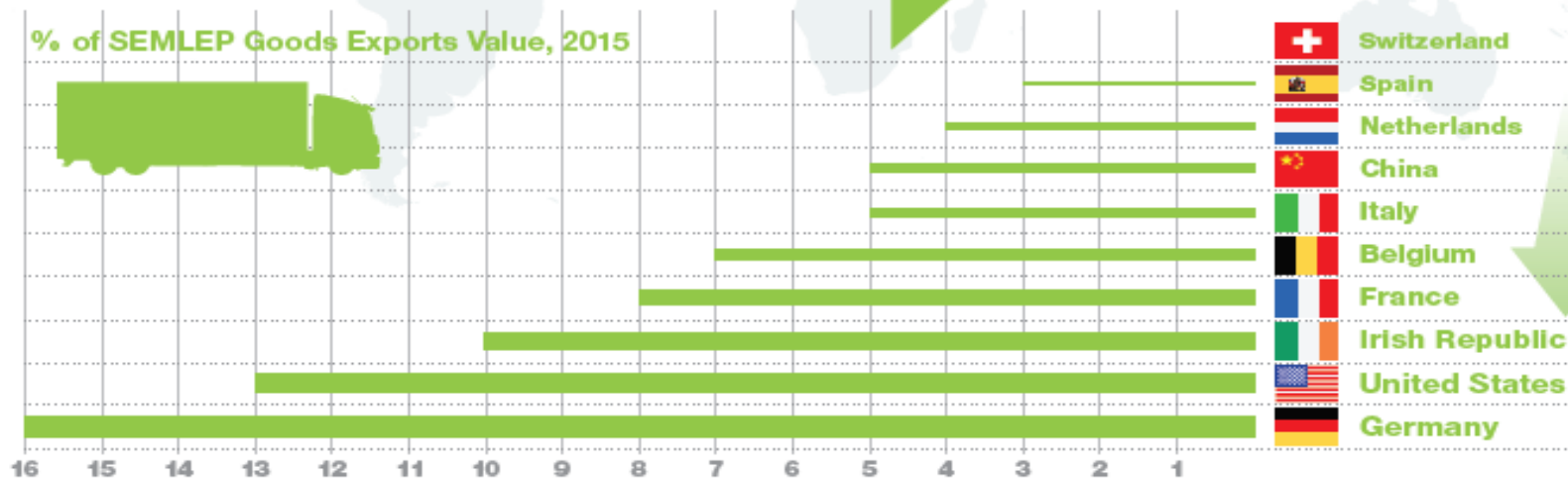
Brexit presents risks (I)



Foreign Direct Investments

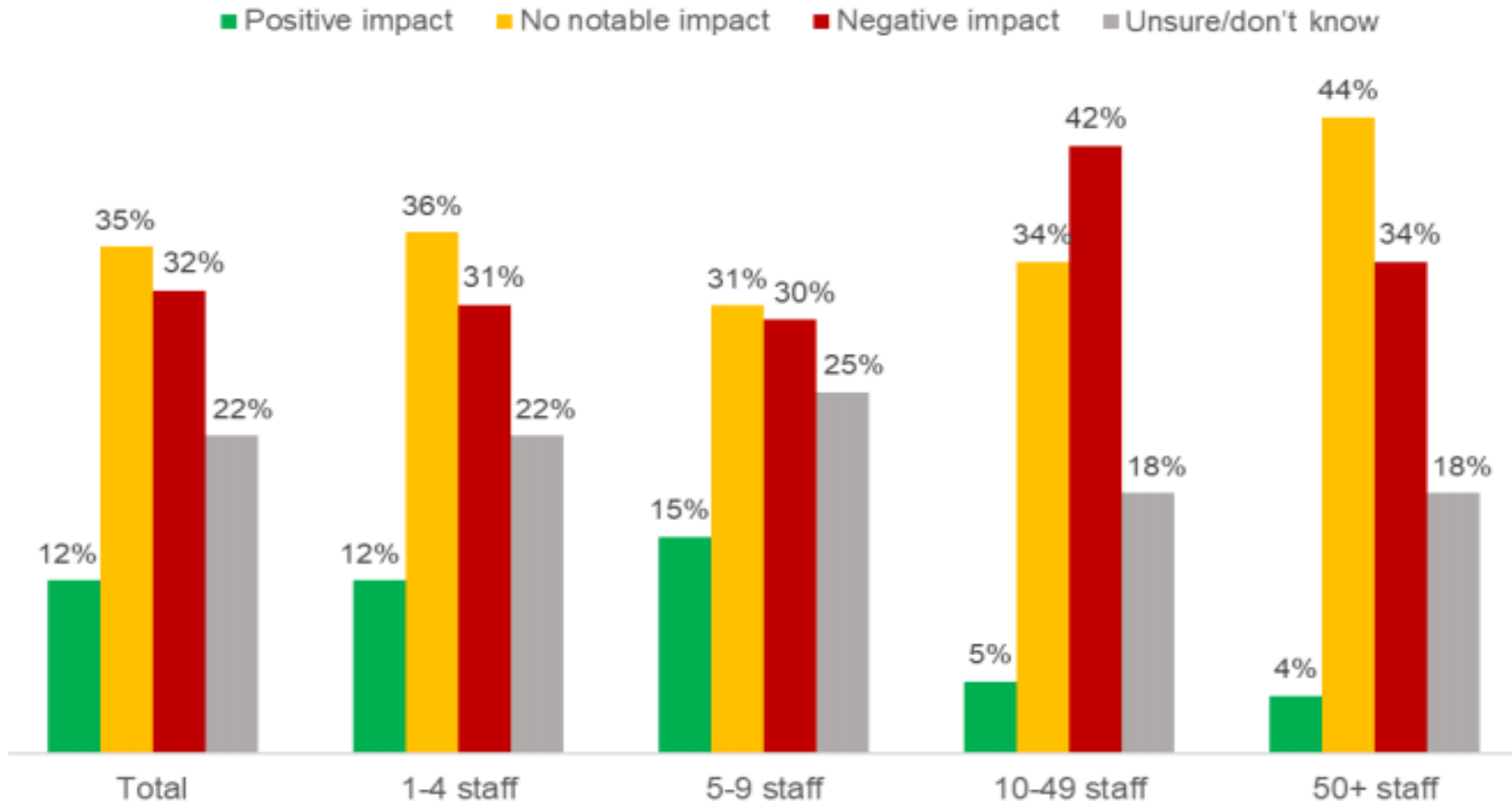
Goods Exports

[Source: ONS and DIT statistics]



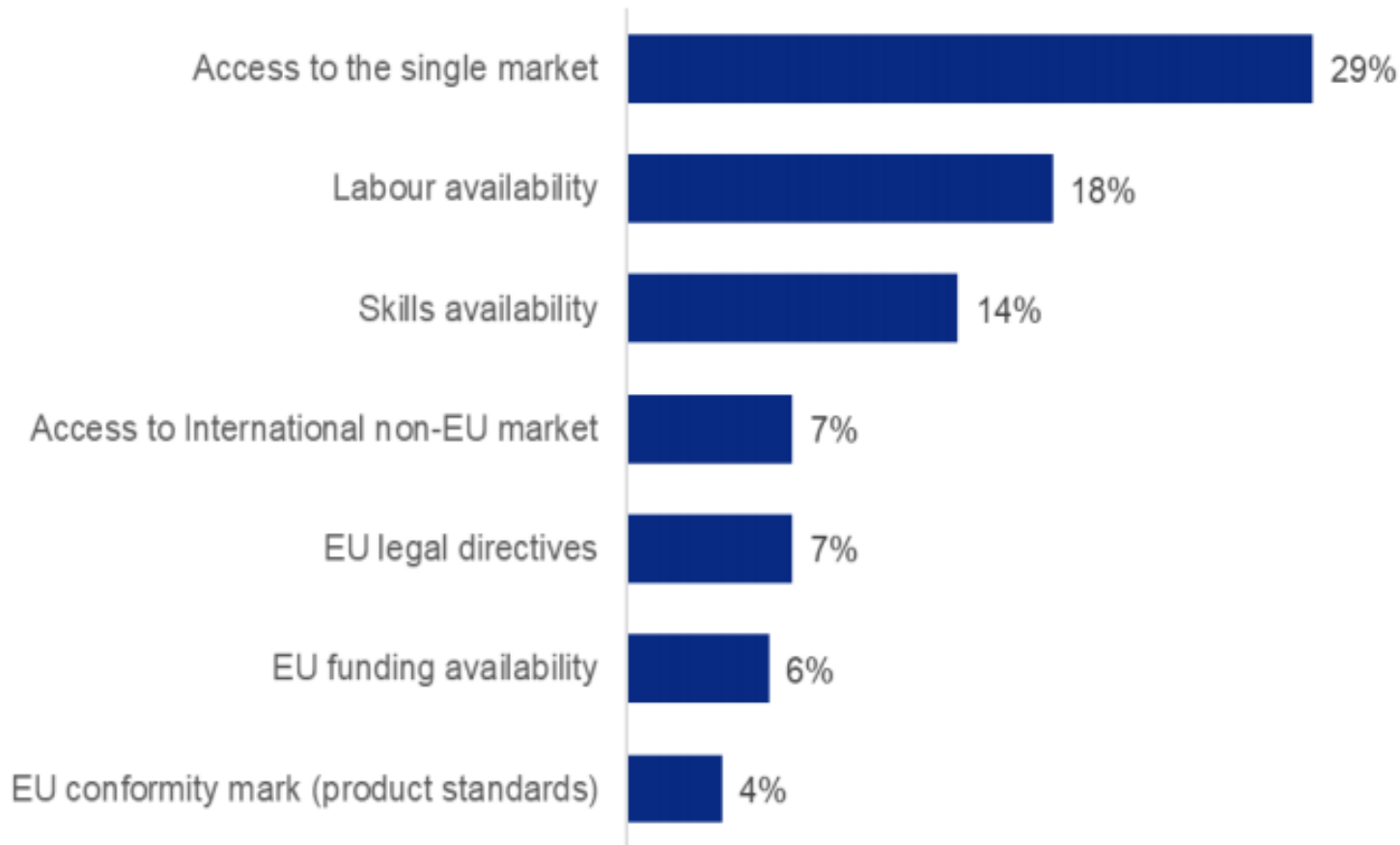
Brexit presents risks (II)

Expected impact of the UK's exit from the European Union by size



Business in the SEMLEP area are most concerned about access to the single market and labour/skills

Key issues for negotiations to leave the European Union



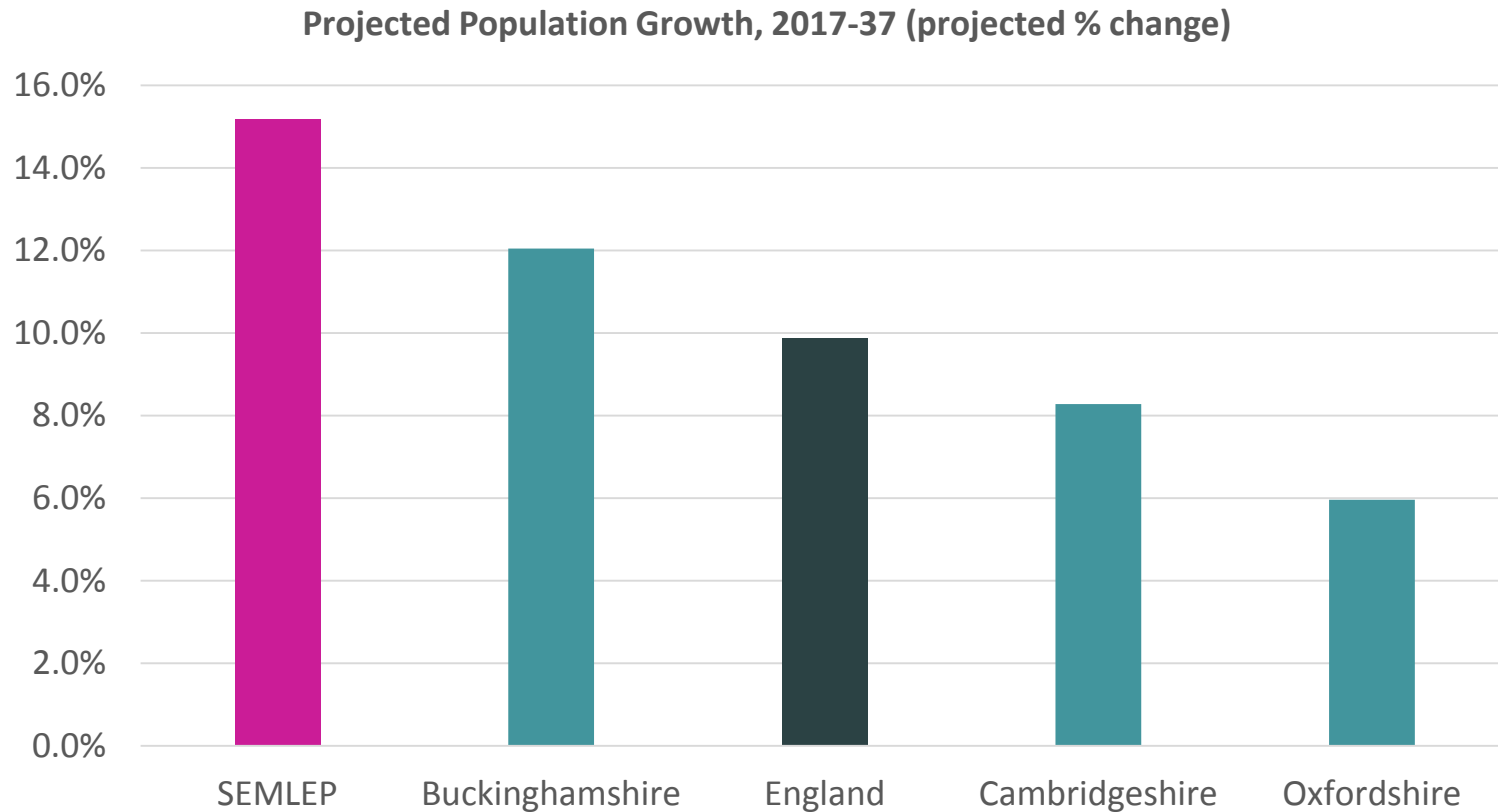


Future Trends & Projections

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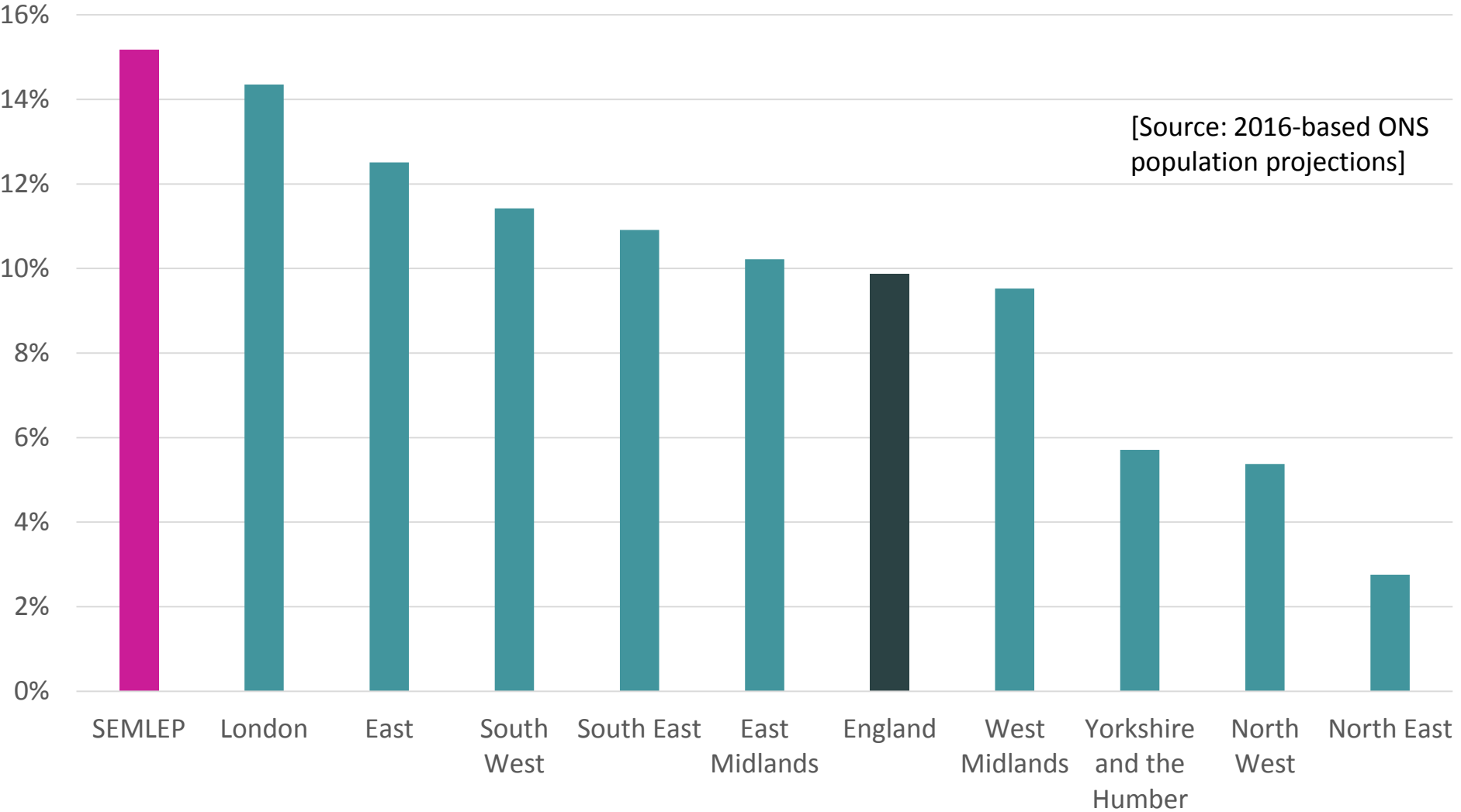
SEMLEP's rapid demographic growth is projected to continue over the next two decades, again surpassing other areas (I)



SEMLEP's rapid demographic growth is projected to continue over the next two decades, again surpassing other areas (II)

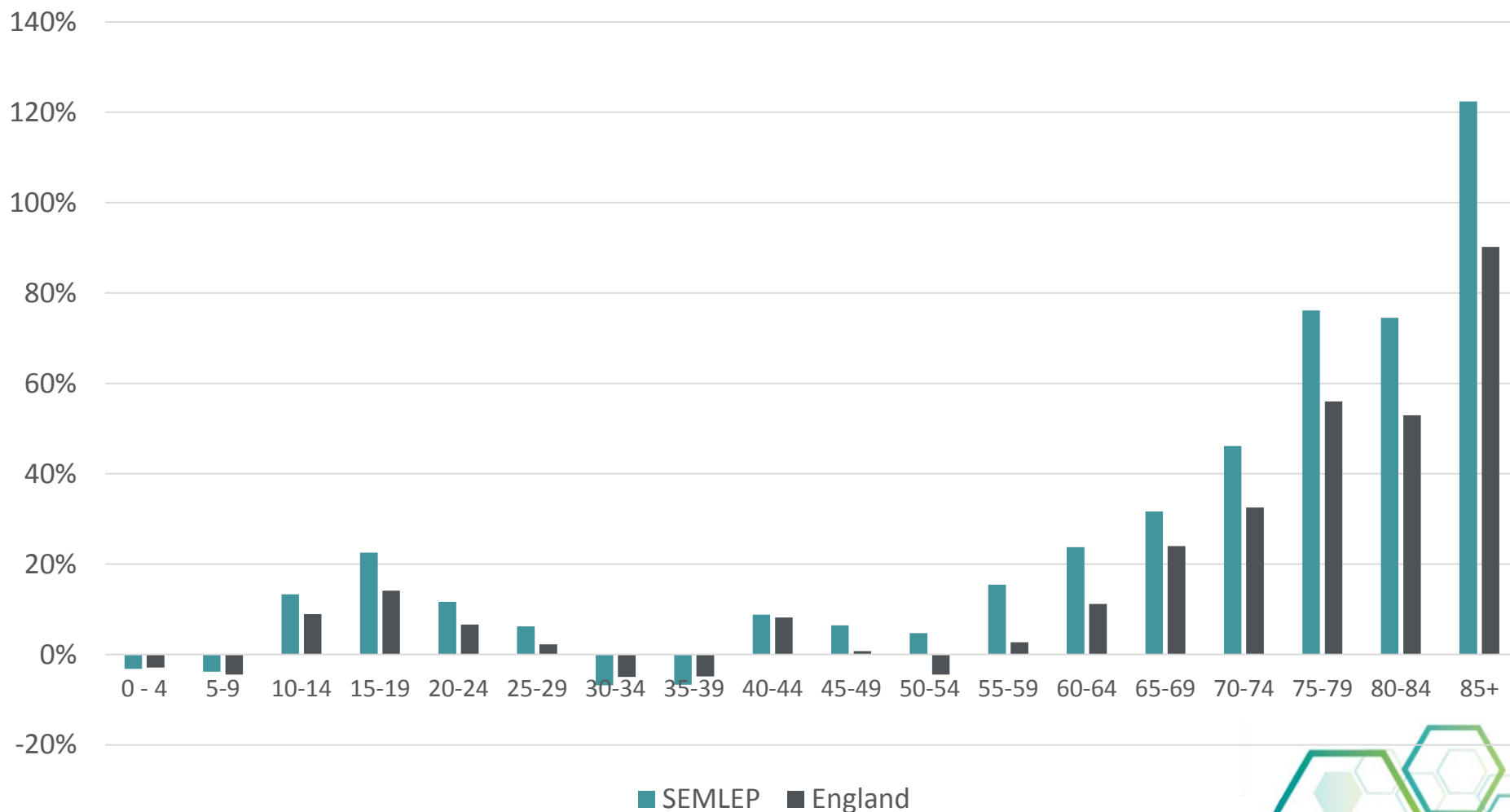
Projected Population Growth, 2017-2037 (projected % change)

[Source: 2016-based ONS population projections]



Like England, SEMLEP's population is ageing

Projected Population Growth by 5-Year Age Band, 2017-37, SEMLEP & England (% change)



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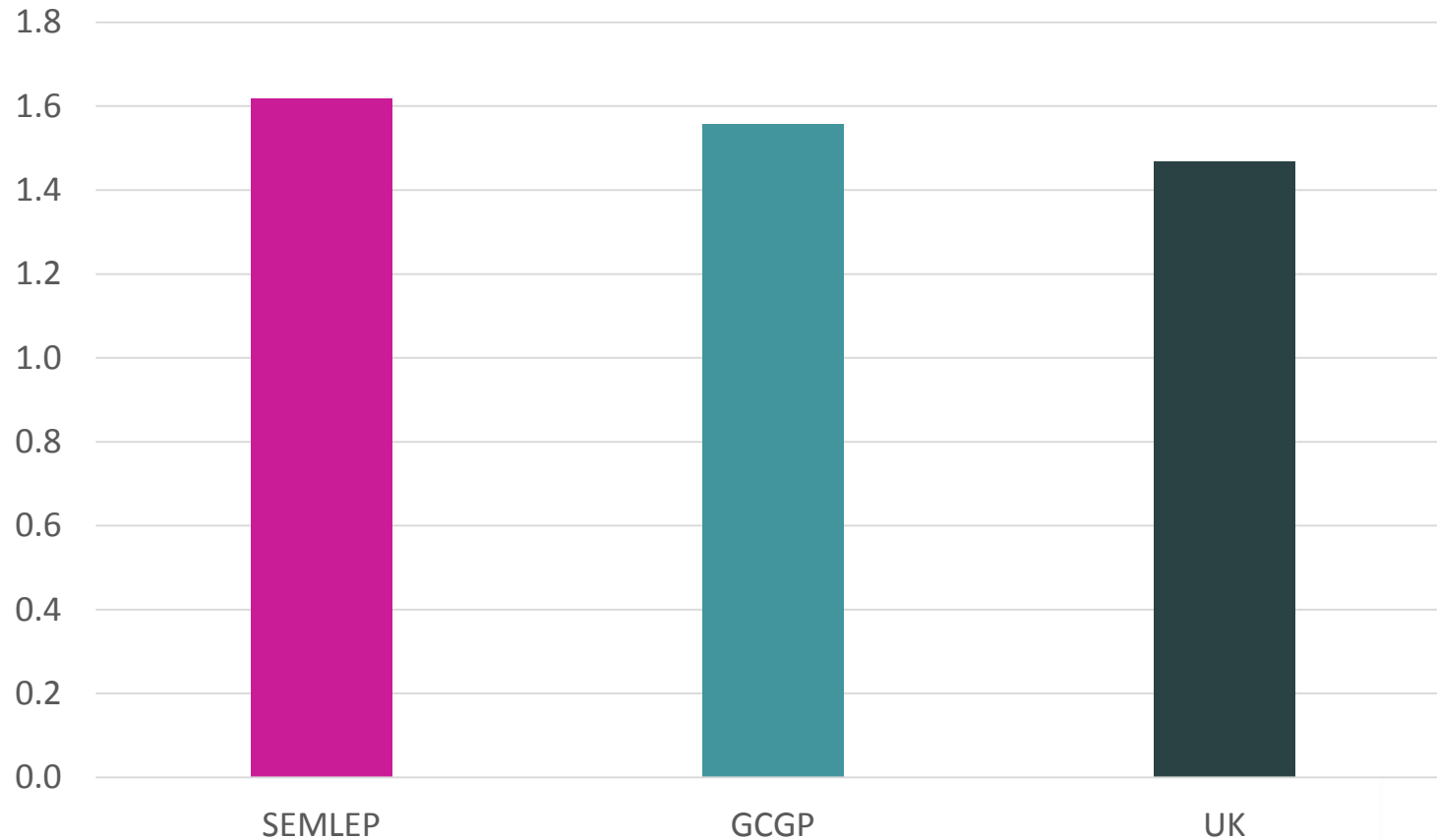
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[Source: 2016-based ONS population projections]

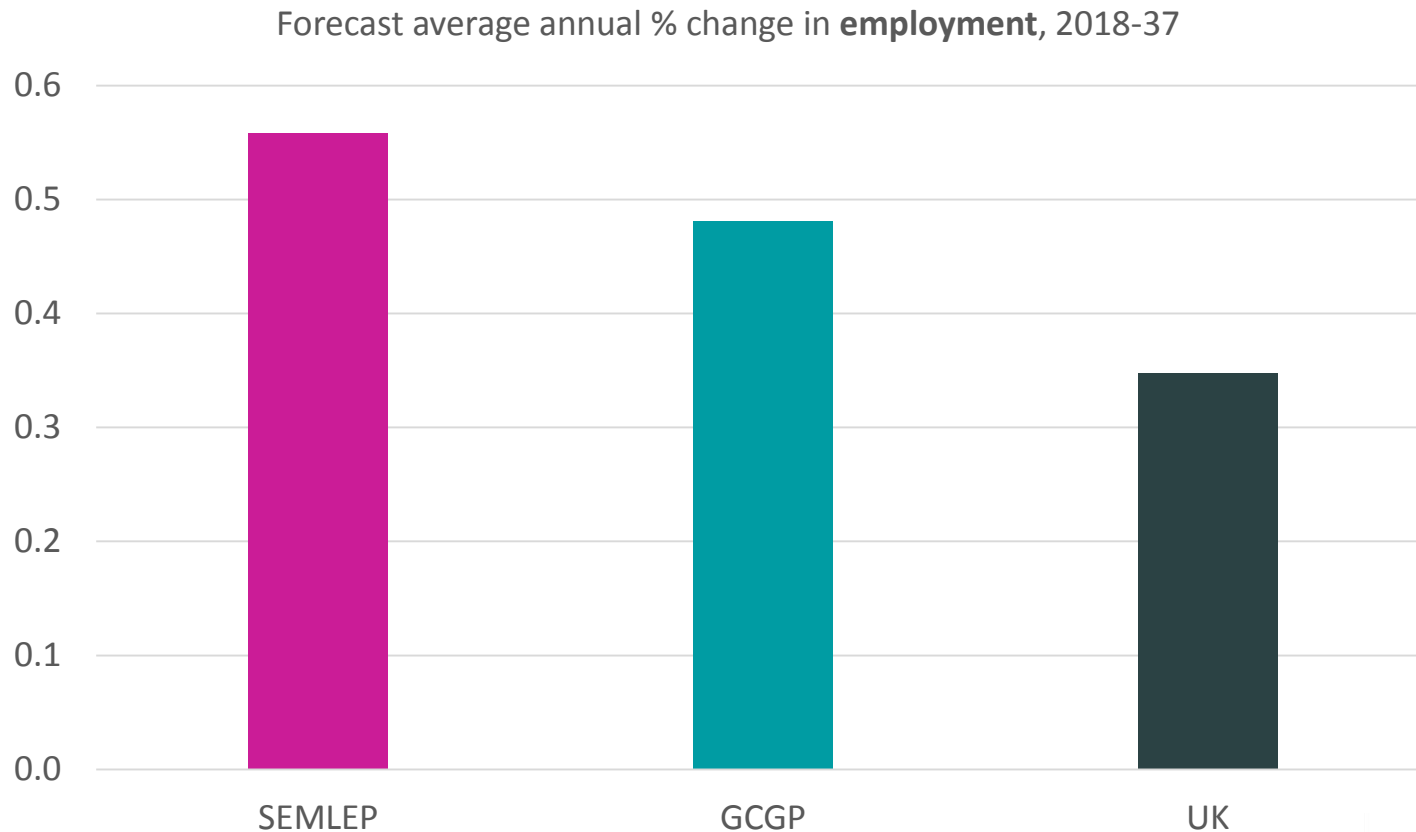


SEMLEP's economy is also expected to grow faster than other areas, even without additional intervention

Forecast average annual % change in **GVA**, 2018-37



SEMLEP's economy is also expected to grow faster than other areas, even without additional intervention (II)



Analysis suggests that automation and technological advances have a positive overall economic impact, but lead to changes in required workforce skills

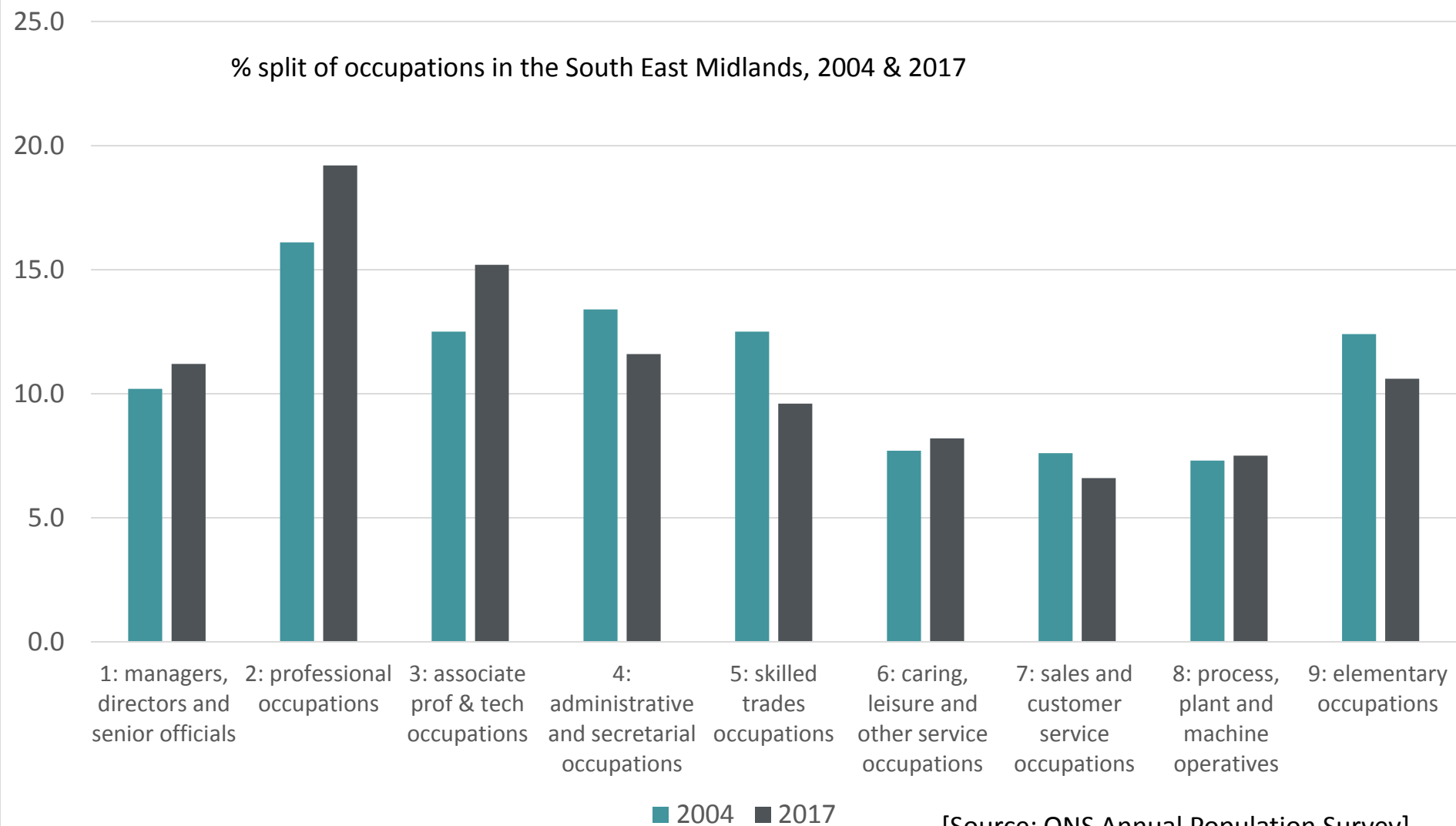
Deloitte have estimated that over the last 15 years in the UK:

- ▶ Technology has contributed to the loss of over 800,000 lower-skilled jobs
- ▶ BUT also helped to create nearly 3.5m new higher-skilled jobs in their place
- ▶ AND each new job pays, on average, just under £10,000 more per annum than the one lost
- ▶ Benefiting every UK nation and region
- ▶ And, overall, adding £140bn to the UK economy in new wages.



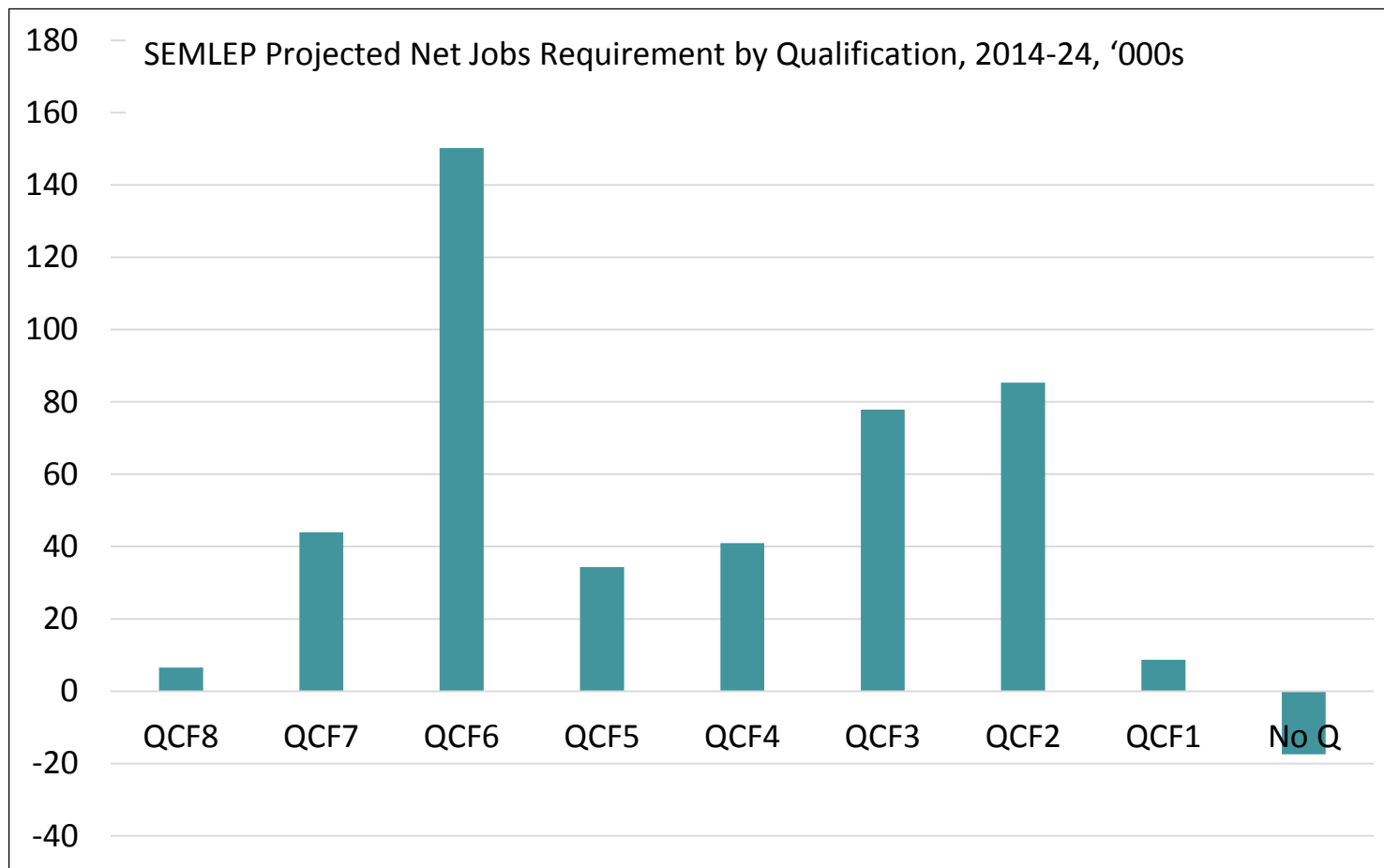


Recent technological progress has led to a 'hollowing-out' of the labour force in SEMLEP (and nationally)...



[Source: ONS Annual Population Survey]

...and this trend looks set to continue (I)

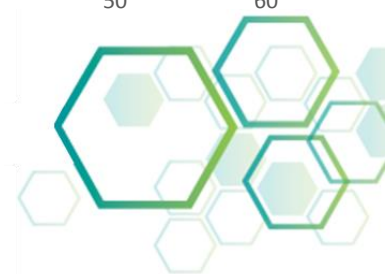
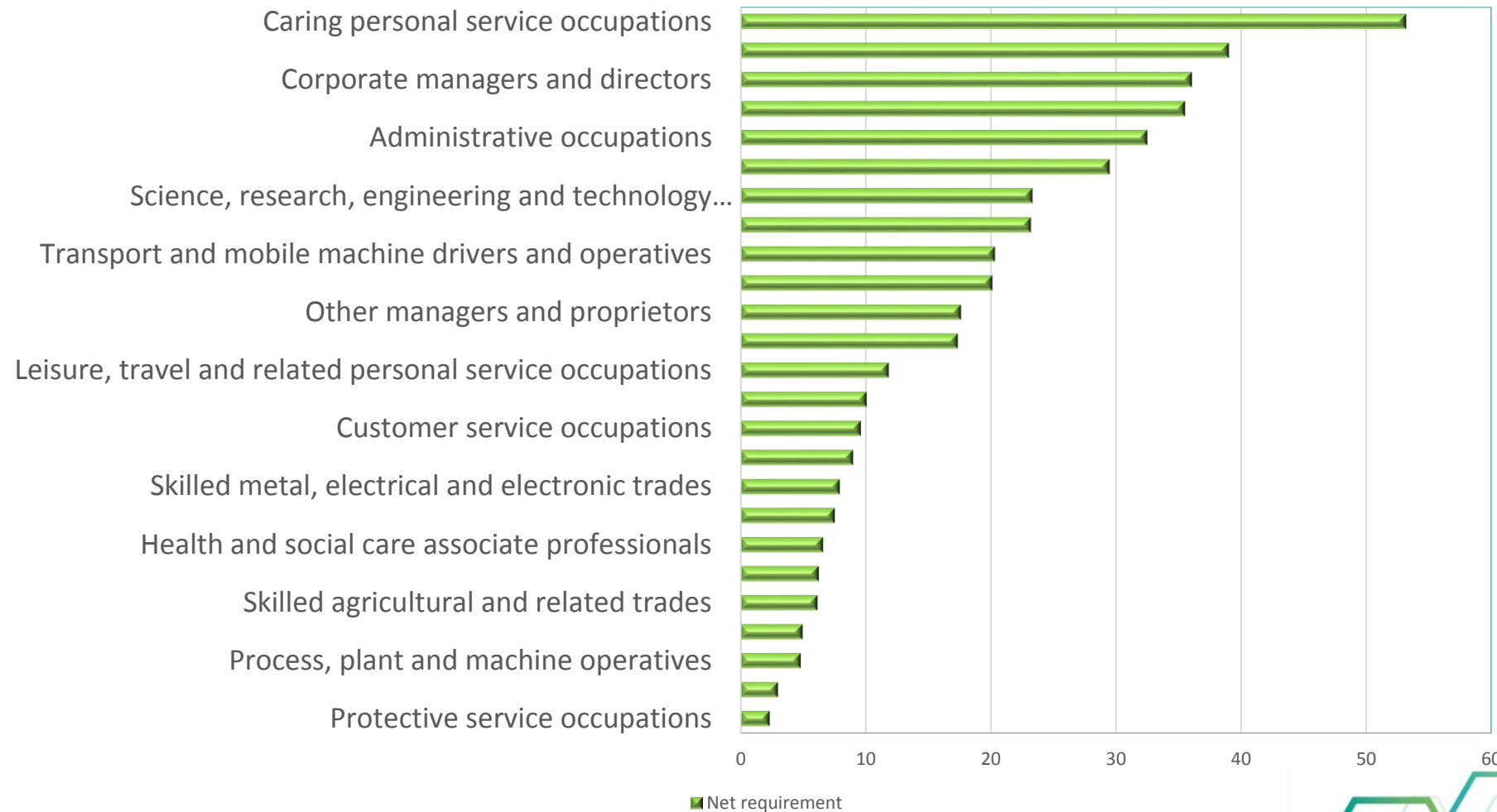


Over 65% of the projected jobs required by 2024 will require a Level 4 qualification or above



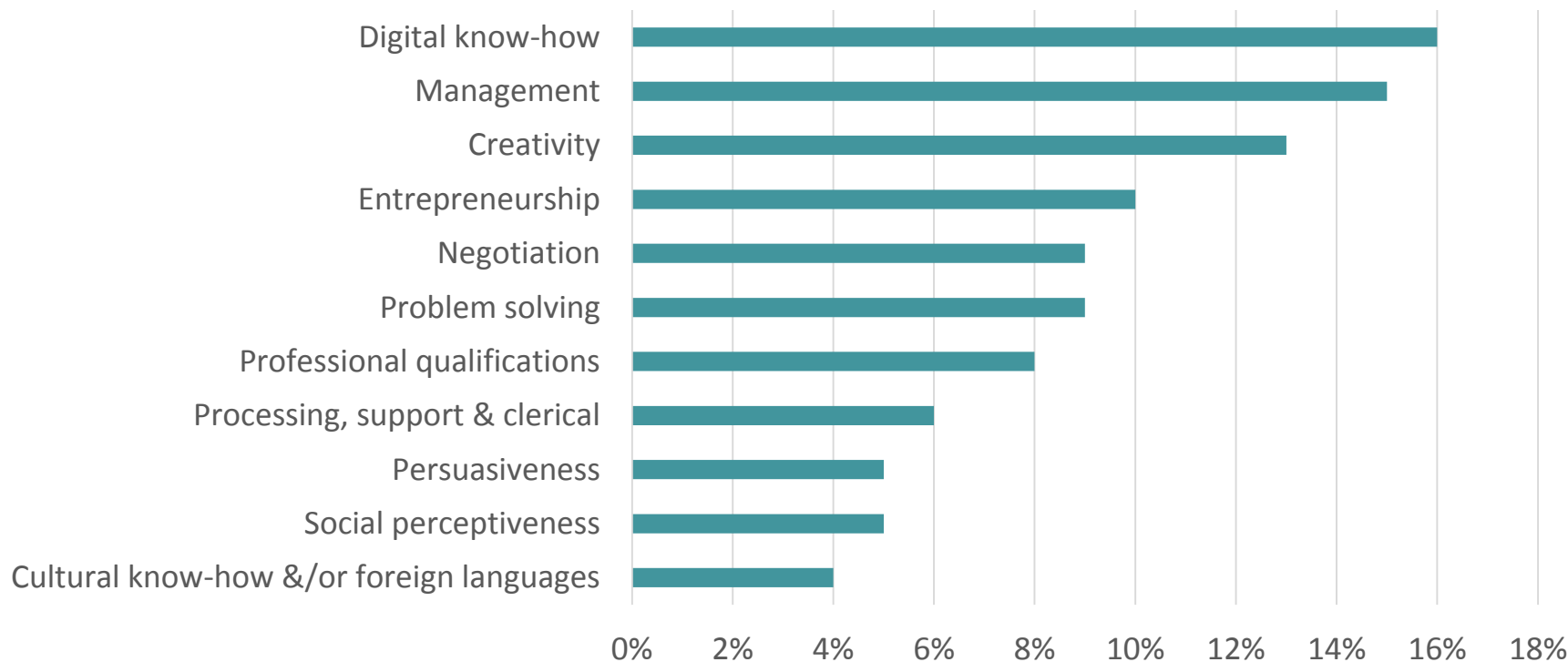
...and this trend looks set to continue (II)

Projected Net Job Requirements in SEMLEP, 2014-2024, '000s

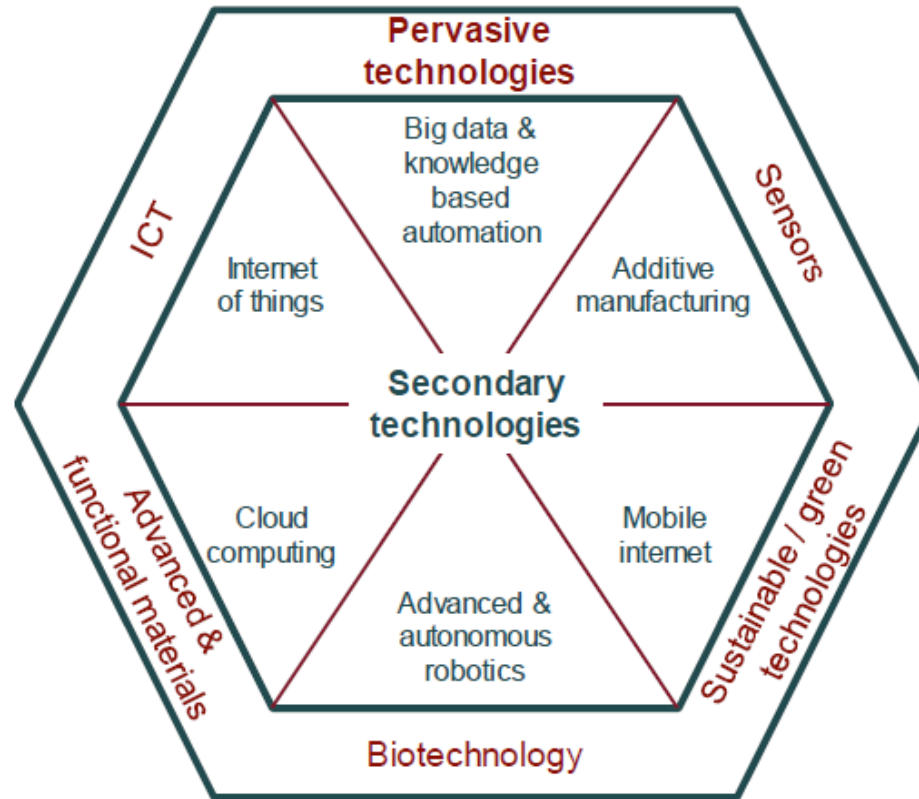


Business leaders believe the skills their businesses will require are going to change

Future skills required by businesses & public sector organisations



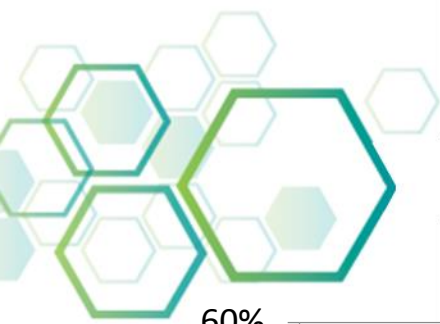
There are a number of key technologies that are likely to shape the future of the economy



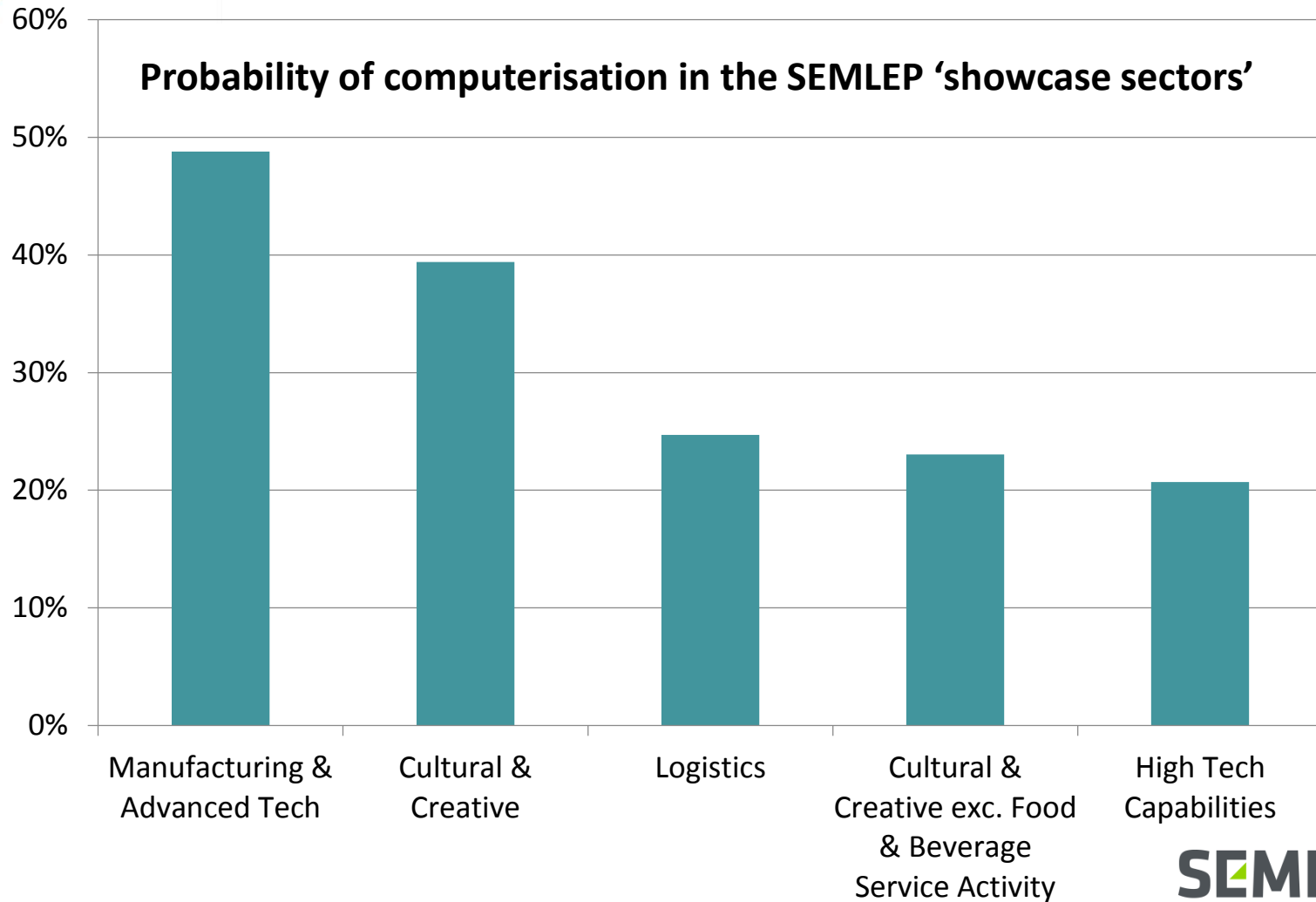
There are a number of variables that serve as indicators of bottlenecks to computerisation

Computerisation bottleneck	O*NET variable	O*NET description
Perception and manipulation	Finger dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.
	Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.
	Cramped spaces	How often does this job require working in cramped work spaces that requires getting into awkward positions?
Creative intelligence	Originality	The ability to come up with unusual or clever ideas about a given topic or situation, or to develop creative ways to solve a problem.
	Fine Arts	Knowledge of theory and techniques required to compose, produce, and perform works of music, dance, visual arts, drama, and sculpture.
Social intelligence	Social perceptiveness	Being aware of others' reactions and understanding why they react as they do.
	Negotiation	Bringing others together and trying to reconcile differences.
	Persuasion	Persuading others to change their minds or behavior.
	Assisting and caring	Providing personal assistance, medical attention, emotional support, or other personal care to others such as coworkers, customers, or patient





The probability of computerisation varies greatly between industrial sectors

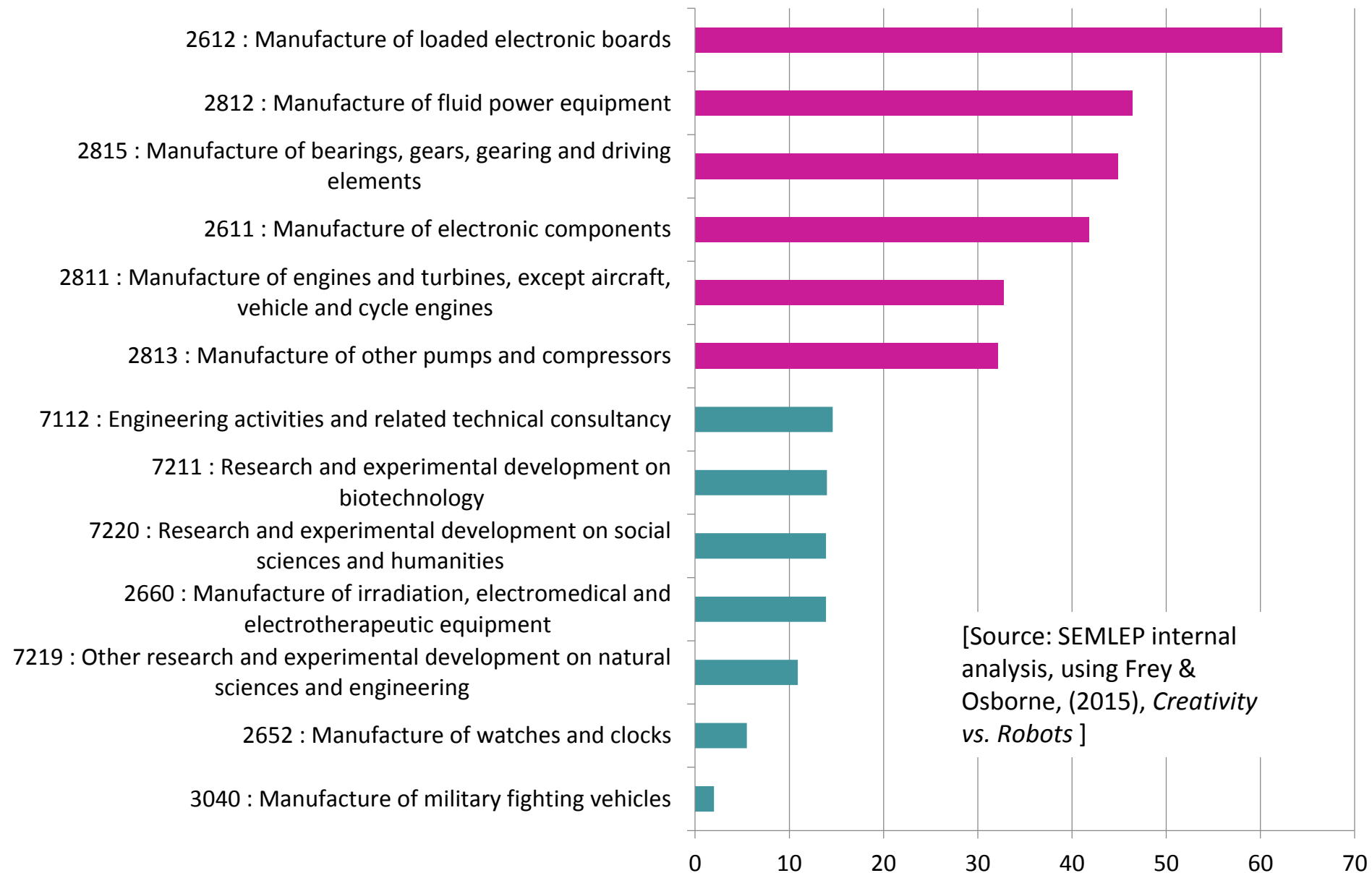


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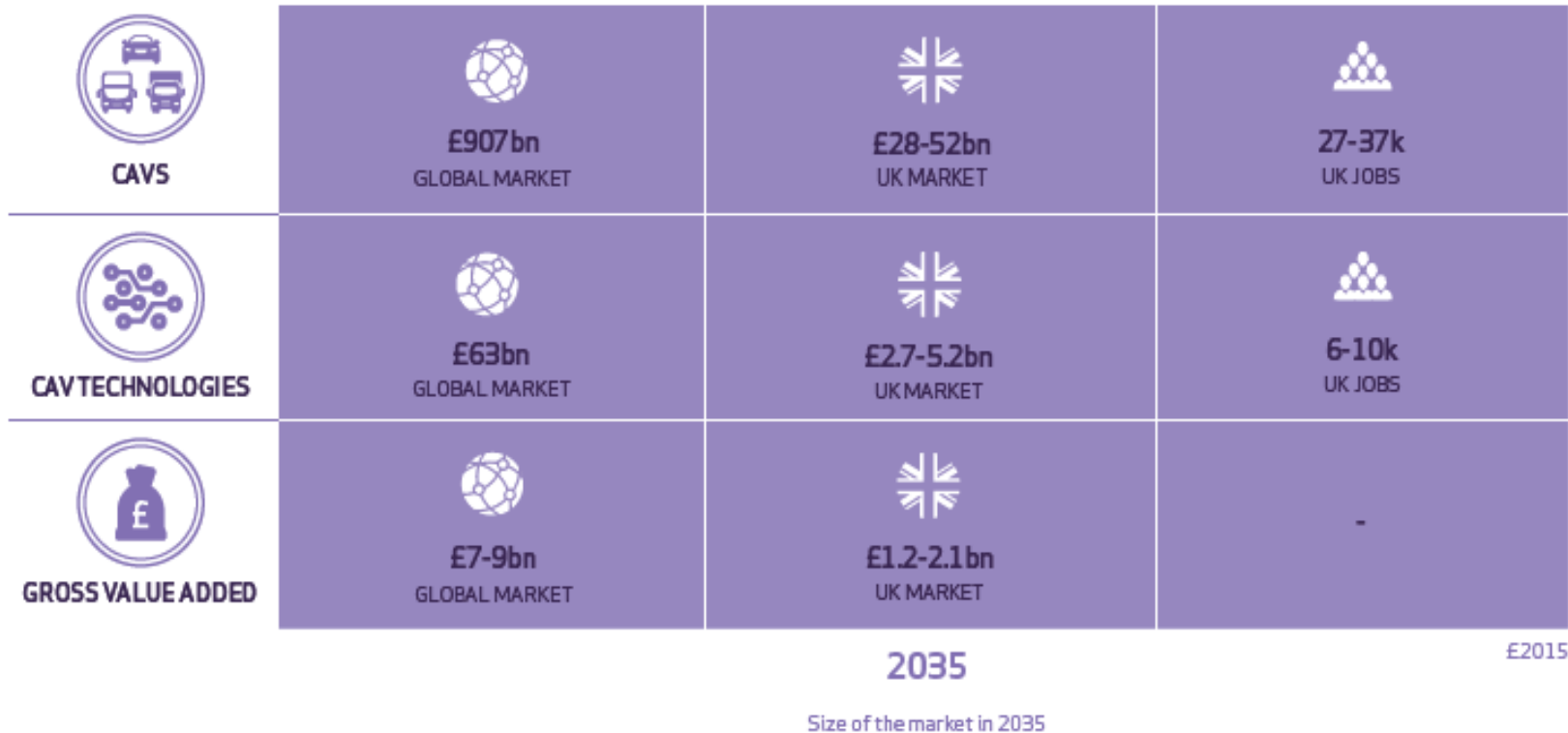
[Source: SEMLEP internal analysis, using Frey & Osborne, (2015), *Creativity vs. Robots*]

High-Tech: Sub-sectors most and least likely to be computerised



There is huge economic potential in a number of areas, including the Connected and Autonomous Vehicles industry

THE OPPORTUNITY FOR UK CAV INDUSTRY



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[Source: Transport Systems Catapult, (2017), *Market Forecast for Connected and Autonomous Vehicles*]



Next Generation Transport:

Significant opportunities for productivity growth

- ▶ **Simulation and modelling using high performance computing capabilities** that will reduce the time to market and associated R&D costs.
- ▶ **Advanced digital design and physical validation** to support 'right-first-time' design, reducing the need for testing and prototyping, and accelerating the development and deployment of novel technologies in future vehicles.
- ▶ **Advanced materials and manufacturing processes**, with a focus on the application of advanced materials and processes such as composites and additive manufacturing to exploit fully the materials and processes most effectively.
- ▶ **Digital manufacturing, supply chain and service management** including big data, supply chain management, intelligent automation and assembly, machining and condition monitoring, manufacturing metrology, metal precision manufacturing, responsive manufacturing, and advanced robotics.



In the context of the clean growth agenda, SEMLEP's unique testing facilities offer particular opportunities

- ▶ “The management and reduction of environmental impact, including vehicle emissions and the impact on air quality, the impact of car greening, intelligent transport systems, and dynamic routing and data to support the green economy is also a significant growth opportunity for the region.”

[Source: The Midlands Engine Science and Innovation Audit, (2016)]

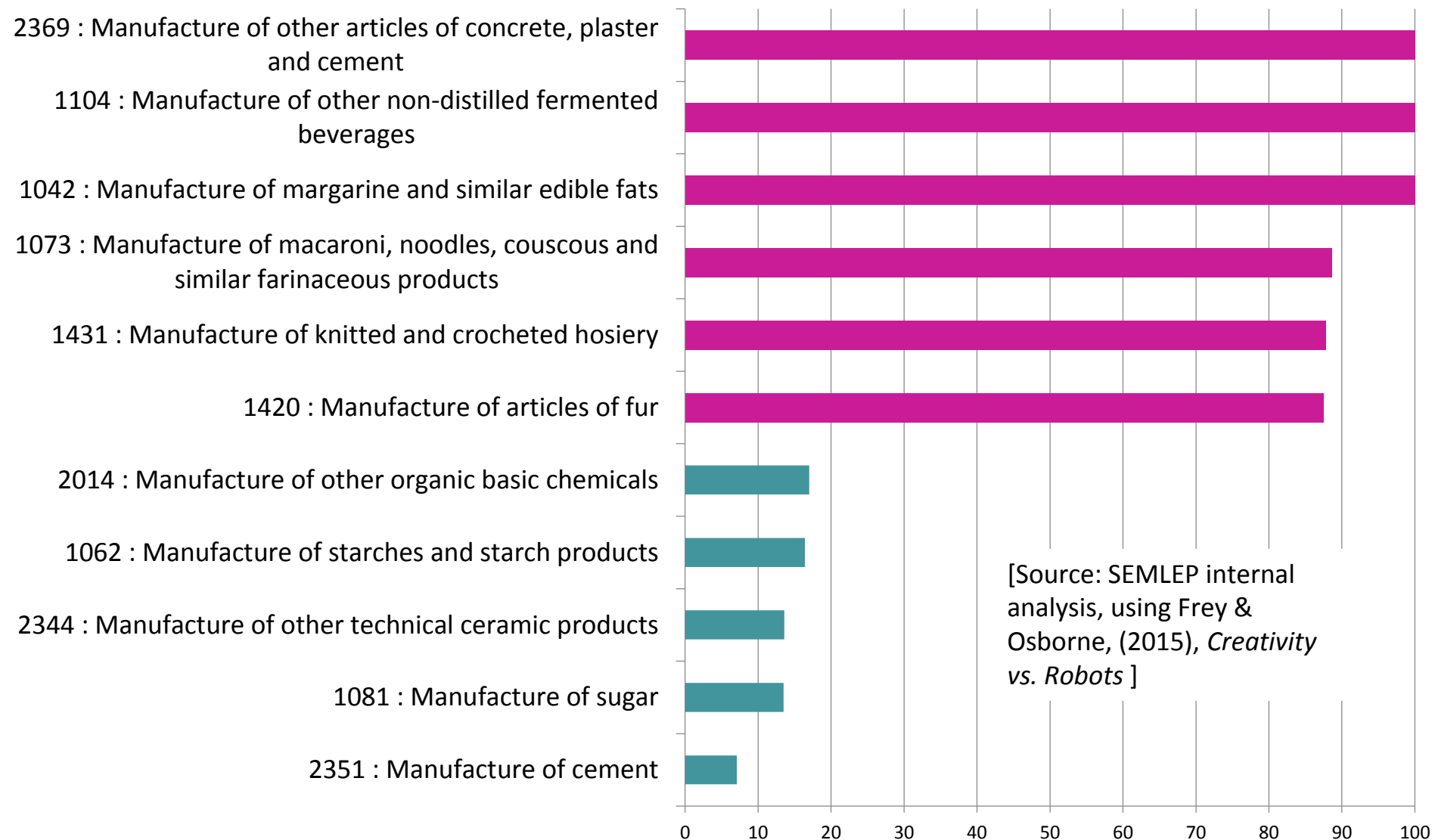
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Manufacturing & Advanced Technology:

Sub-sectors most and least likely to be computerised



The Food & Drink sector has very large potential for future growth

- ▶ Revenue in the global packaged food market is expected to reach \$3.03tn by 2020.
- ▶ The global groceries market is forecast to reach \$11.8tn by 2020.
- ▶ It is estimated that demand for food will increase by 80-100% by 2050. Consumption of dairy products in developing countries is predicted to rise by 70% by 2050.



But ways in which these products are produced is likely to change – need to make the most of our Food & Drink innovation assets in this area

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[Source: The Midlands Engine Science and Innovation Audit, (2016)]



Investment in ‘Future Food Processing’ (and the relevant talent pipeline) is critical to increasing local productivity in the sector

- ▶ **Efficient food processing:** automation and labour efficiency; low energy food processing (including reduced energy use in cooking, chilling, logistics and storage); water efficiency; data analytics
- ▶ **‘Zero waste’ food chains:** optimising the yield of primary products from raw materials through technology to reduce damage; increasing the exploitation of secondary products; and developing ‘waste’ product utilisation strategies (including packaging waste recyclability and reuse).
- ▶ **New opportunities for value creation from ‘the Circular Economy’:** stretching R&D and product design and development, to supplier management, production, after sales services and consumption, followed by recycling, remanufacturing and reuse.
- ▶ **Food product innovation:** reformulation to reduce levels of salt, fat and/or sugar; ease of cooking/use; smart packaging to reduce waste; shelf life extension; food security & traceability.
- ▶ **Agri-food sector:** more efficient and lower waste processes, and more innovation and long-lasting products.



Food & Drink: Greg Clark speech

- ▶ “Back in February, I announced £90 million of Industrial Strategy money - bringing together AI, robotics and earth observation - to improve supply chain resilience in the agri-food sector.”
- ▶ “This includes support for ‘innovation accelerators’ charged with exploring the commercial potential of new tech ideas at pace.”
- ▶ “I see food and drink as being one of most important sectors of the future.”
- ▶ “For this reason, I have asked the Government’s Chief Scientific Adviser for advice on the potential opportunities that exist to significantly raise productivity across the whole UK food production system.”



The Food and Drink Manufacturing Sector Deal could offer opportunities

- ▶ Current proposals aim to boost productivity in the sector by:
 - ▶ Supporting firms to increase exports
 - ▶ Upgrading the engineering and digital capability of the sector
- ▶ The second of these plays well to the SEMLEP area's existing sector strengths, and plans to support an increase in the pipeline of these skills

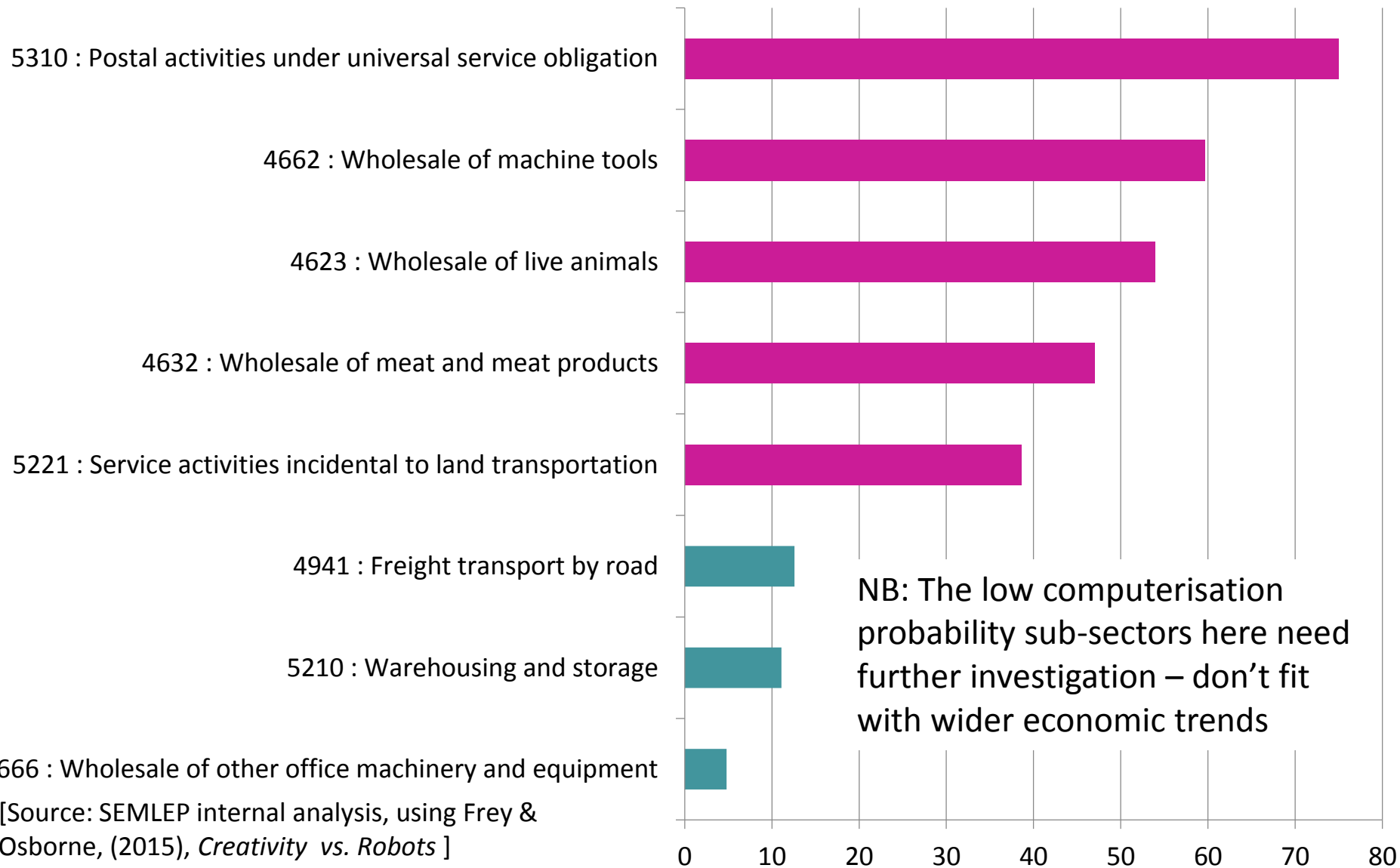
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Logistics:

Sub-sectors most and least likely to be computerised



New technologies mean massive potential for increased productivity within the Logistics sector

► **Changing customer expectations:**

- Far greater expectations around efficiency & performance (faster time-to-market, increased customisation)
- New shopping patterns ('total' & 'connected' retail)

► **Technological breakthroughs:**

- Data & analytics absolutely key
- Automation could reshape the workforce
- Possibility of hyperloops/other 'game-changers'

► **New entrants to the industry:**

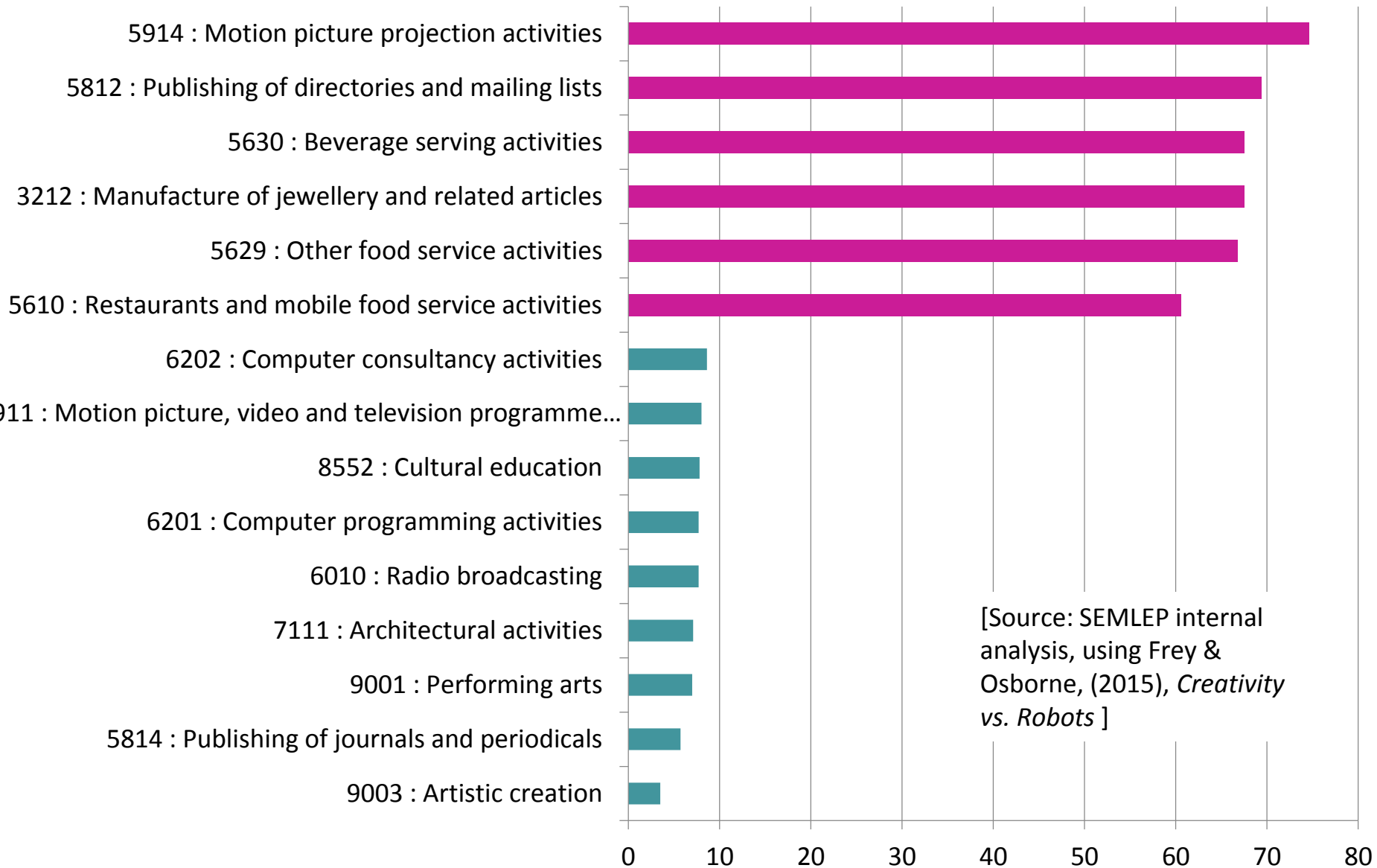
- Start-ups (virtual freight forwarders; last-mile delivery)
- Autonomous vehicles/crowd-sharing (self-driving lockers; storage in car sharing)

► **Greater collaboration/ standardisation**

- Use of 'Physical Internet'

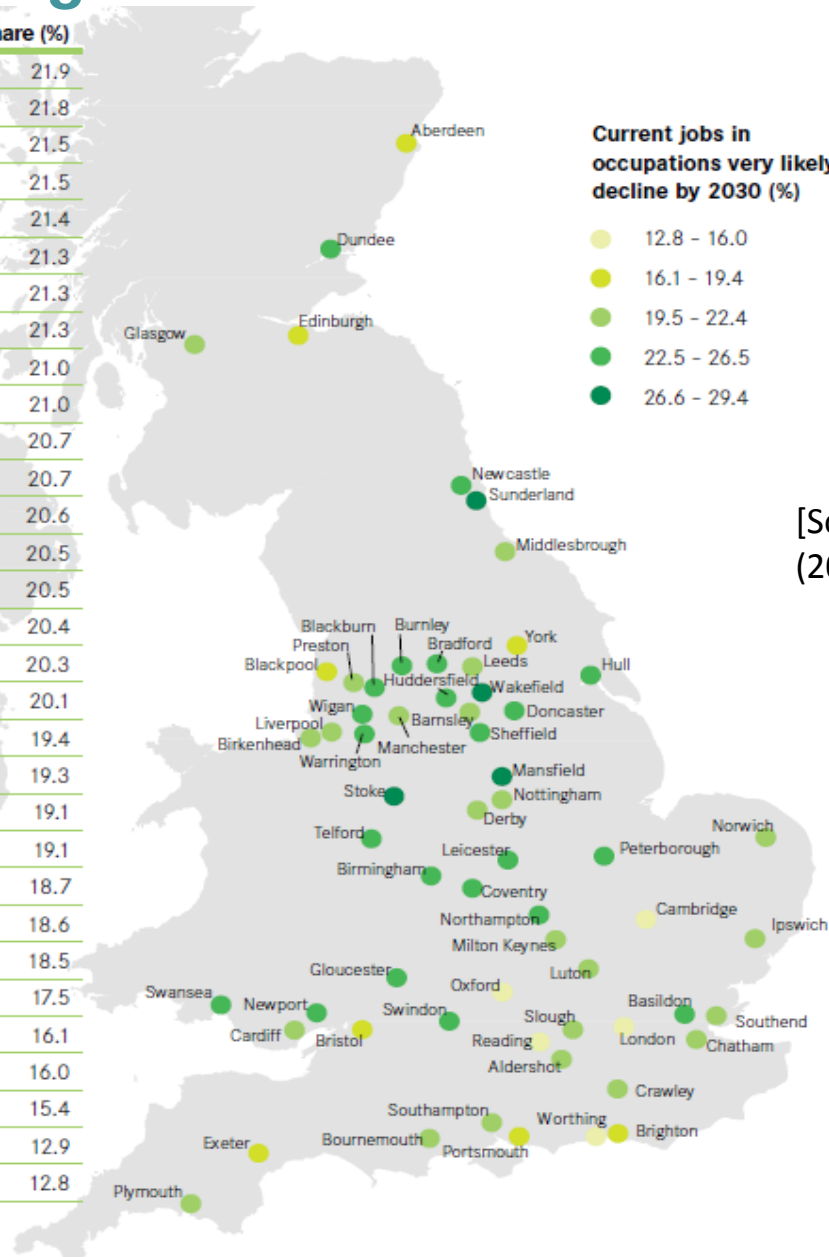
[Source: PwC, (2016), *Shifting Patterns: The Future of the Logistics Industry*]

Creative & Cultural: Sub-sectors most and least likely to be computerised



Centre of Corridor to be more heavily affected by technological change than either end

City	Share (%)	City	Share (%)
Mansfield	29.4	Bournemouth	21.9
Sunderland	29.2	Birkenhead	21.8
Wakefield	29.2	Barnsley	21.5
Stoke	28.4	Milton Keynes	21.5
Doncaster	26.5	Preston	21.4
Blackburn	26.3	Liverpool	21.3
Northampton	25.8	Leeds	21.3
Dundee	25.3	Derby	21.3
Huddersfield	25.3	Plymouth	21.0
Telford	24.9	Nottingham	21.0
Leicester	24.9	Norwich	20.7
Coventry	24.8	Slough	20.7
Wigan	24.7	Crawley	20.6
Peterborough	24.6	Ipswich	20.5
Bradford	24.2	Glasgow	20.5
Swindon	23.9	Cardiff	20.4
Hull	23.9	Aldershot	20.3
Basildon	23.9	Luton	20.1
Burnley	23.8	Exeter	19.4
Warrington	23.7	Aberdeen	19.3
Sheffield	23.5	Bristol	19.1
Newport	23.4	Portsmouth	19.1
Newcastle	23.3	York	18.7
Birmingham	23.2	Blackpool	18.6
Gloucester	23.2	Brighton	18.5
Swansea	23.2	Edinburgh	17.5
Southend	22.4	London	16.1
Middlesbrough	22.4	Worthing	16.0
Manchester	22.4	Reading	15.4
Chatham	21.9	Cambridge	12.9
Southampton	21.9	Oxford	12.8



[Source: Centre for Cities, (2018), *Cities Outlook 2018*]



Research suggests that job-related training and greater ICT usage can boost productivity in low-wage industries

- ▶ Analysis finds countries tend to have a total factor productivity lead over the UK within a particular sector (or have a smaller lag) where they:
 - ▶ Engage a relatively higher share of employees in job-related training
 - ▶ Have a higher share of employees subject to management practices such as performance-related pay or continuous improvement
 - ▶ **Have a higher share of employees using ICT**
 - ▶ Have a lower share of employees on temporary contracts



Plans to develop a STEM skills-focused University in Milton Keynes could help to address future skills needs



- ▶ Cranfield University = lead higher education provider.
- ▶ With key partners including Grant Thornton, MK College, Microsoft and Tech Mahindra.
- ▶ Undergraduate curriculum in key areas including digital, cyber, autonomy, robotics and artificial intelligence.
- ▶ Will also include part-time/apprenticeship pathways and short courses/continued professional development
- ▶ First cohort of students to arrive in 2023.



Other key skills institutions/ proposals

- ▶ **Bedford College Advanced Engineering Centre:** offers employers space for electrical and engineering training in conjunction with the College to raise skills and boost productivity in the town.
- ▶ **Engineering and Construction Skills Centre** in Leighton Buzzard, Central Bedfordshire College
- ▶ MK College plans for an **Institute of Digital Technology** at Bletchley Park
- ▶ **Open University bid for a Doctoral Centre** to support training in Software Engineering for Connected People and Things.



Bedford College Advanced Engineering Centre



Engineering and Construction Skills Centre

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There might also be more that could be done to foster greater networking and links within and between the scientific and creative industries

“The intersection between the digital world and the creative industries offers great potential, for example, and will depend on a workforce that is recalibrated to mix creativity with technical coding and programming skills, as well as knowledge of STEM subjects.”

The National Skills Academy for Creative and Cultural

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Growth must be undertaken in a manner that protects and enhances environmental quality

- ▶ Local Nature Partnerships
- ▶ Natural Capital Investment Plan
- ▶ Promotion of a lower-carbon economy

Kettering Energy Park

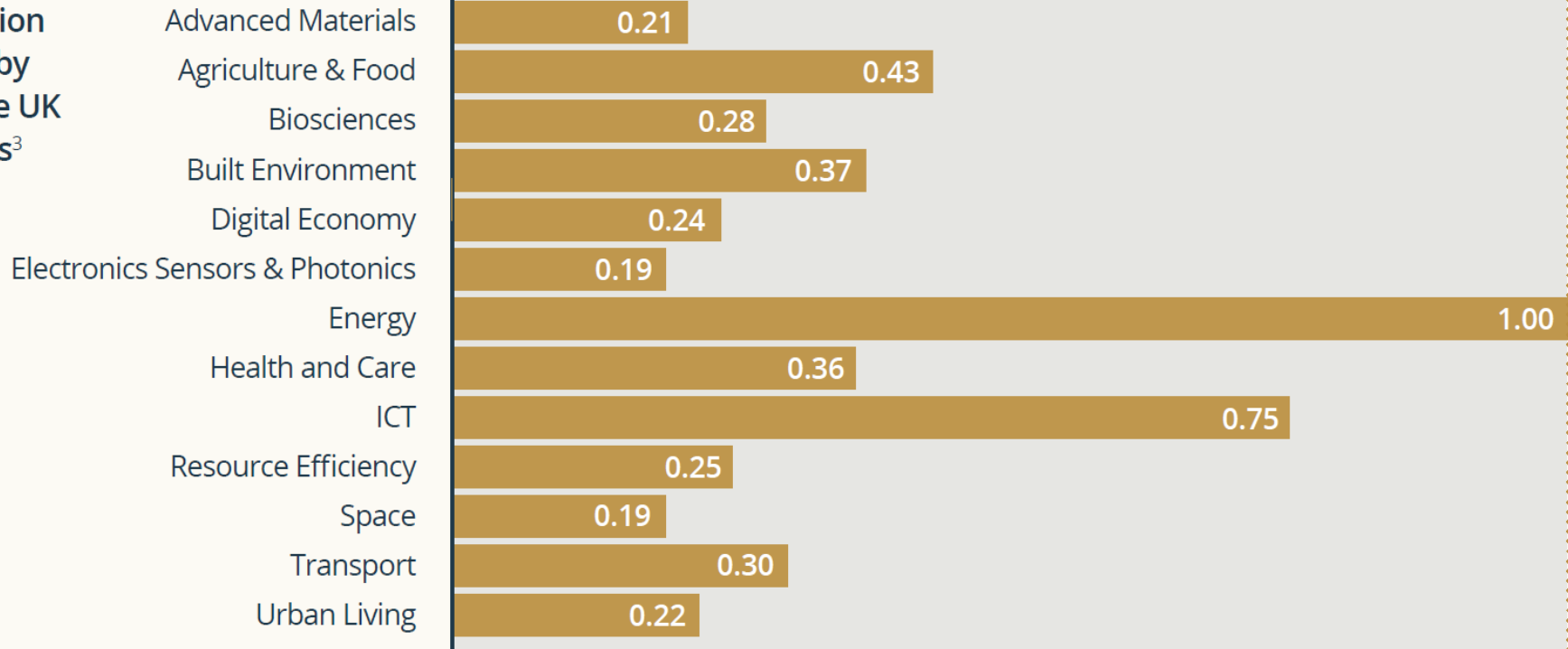


Energy research is an area of expertise in the SEMLEP area...

**Publication Output by Innovate UK Priorities,
SEMLEP vis-à-vis other LEPs (exc. London)**

Top performer = 1

Publication
Output by
Innovate UK
Priorities³



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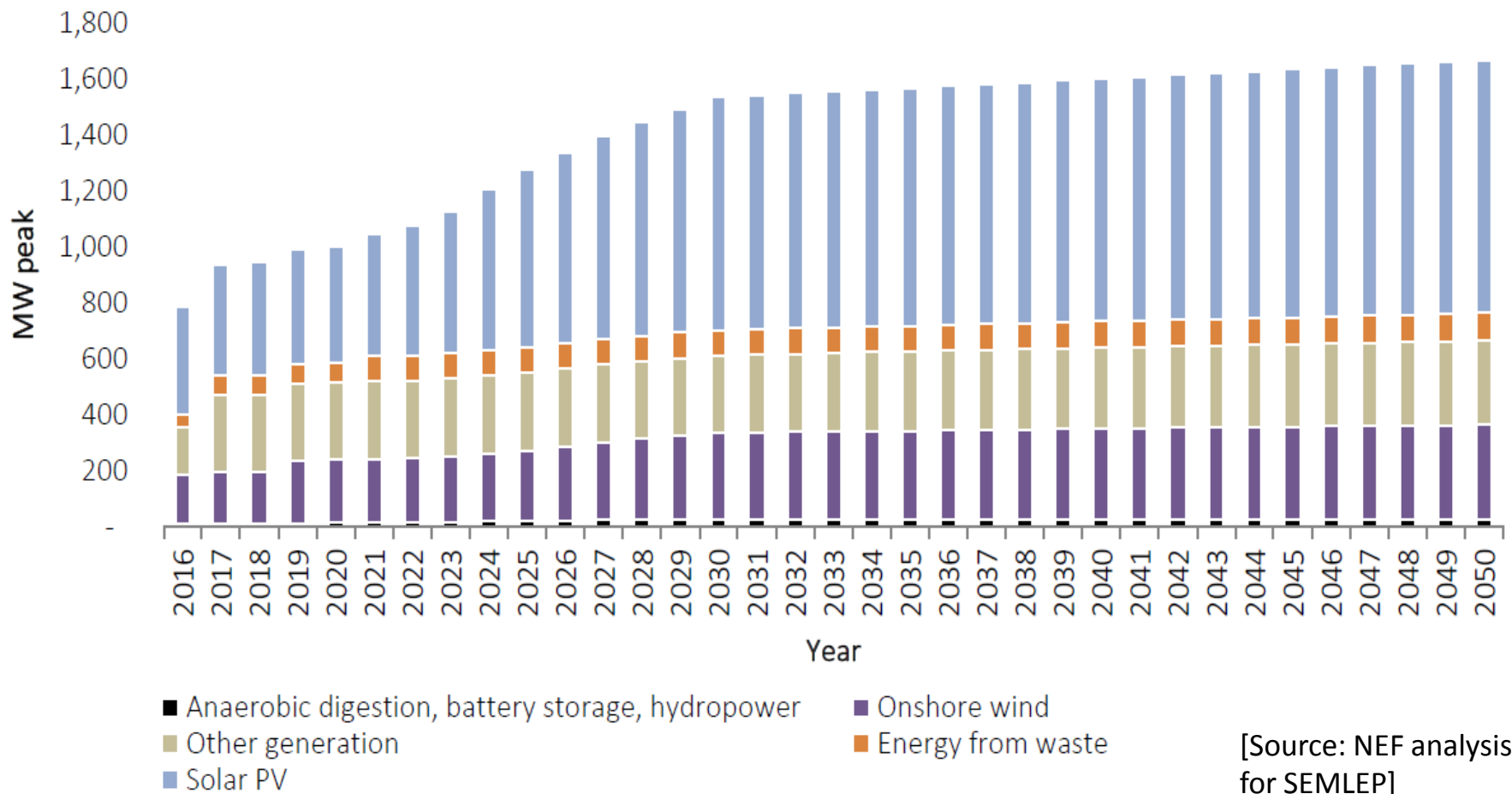
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[Source: Smart Specialisation Hub LEP Profiles]



...and there is considerable potential for new sources of energy in the area

Projected Distributed Generation of Electricity in the SEMLEP Area, to 2050



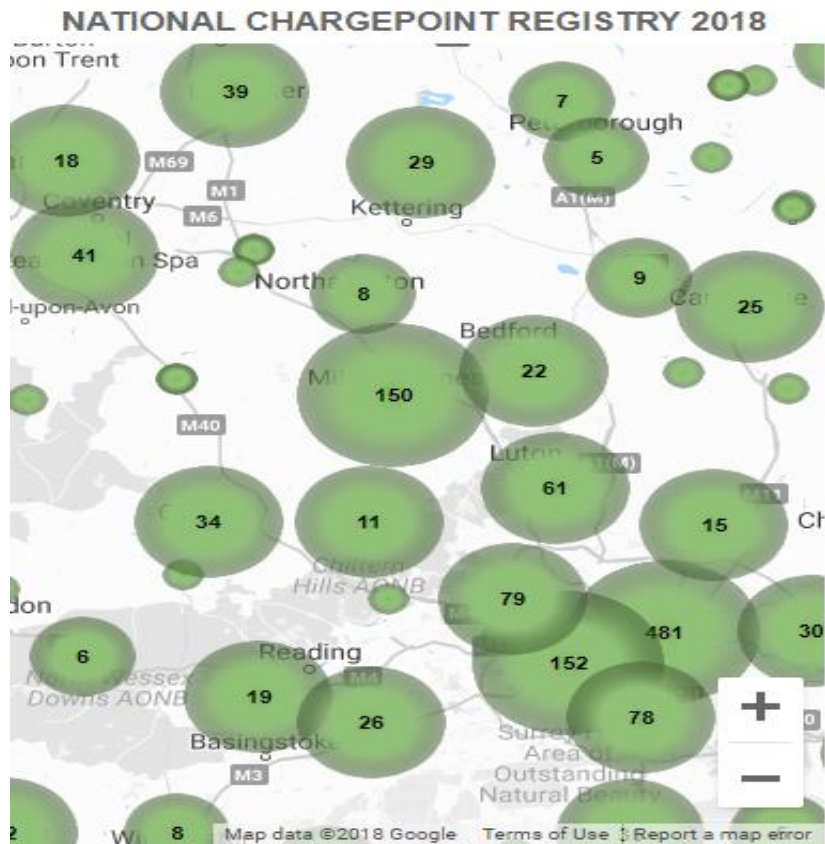
Smart Energy Systems offer growth potential, both as a growth enabler, and in their own right...

- ▶ “Innovation opportunities to exploit smart systems exist largely at the 'system edge' (in the 'last mile' of supply), adjacent to the point of use and 'behind the meter' in the consumer's home or premises. “
- ▶ “Vital research and industrial capabilities which sustain innovation will be in sensors, controls, communications, data (including the architectures which will enable them to be deployed effectively), power systems, and modelling and simulation capabilities to analyse system behaviour under change.”



...as do Electric Vehicles and Electric Vehicle Infrastructure

Currently installed electric vehicle charging points across the South East and Midlands



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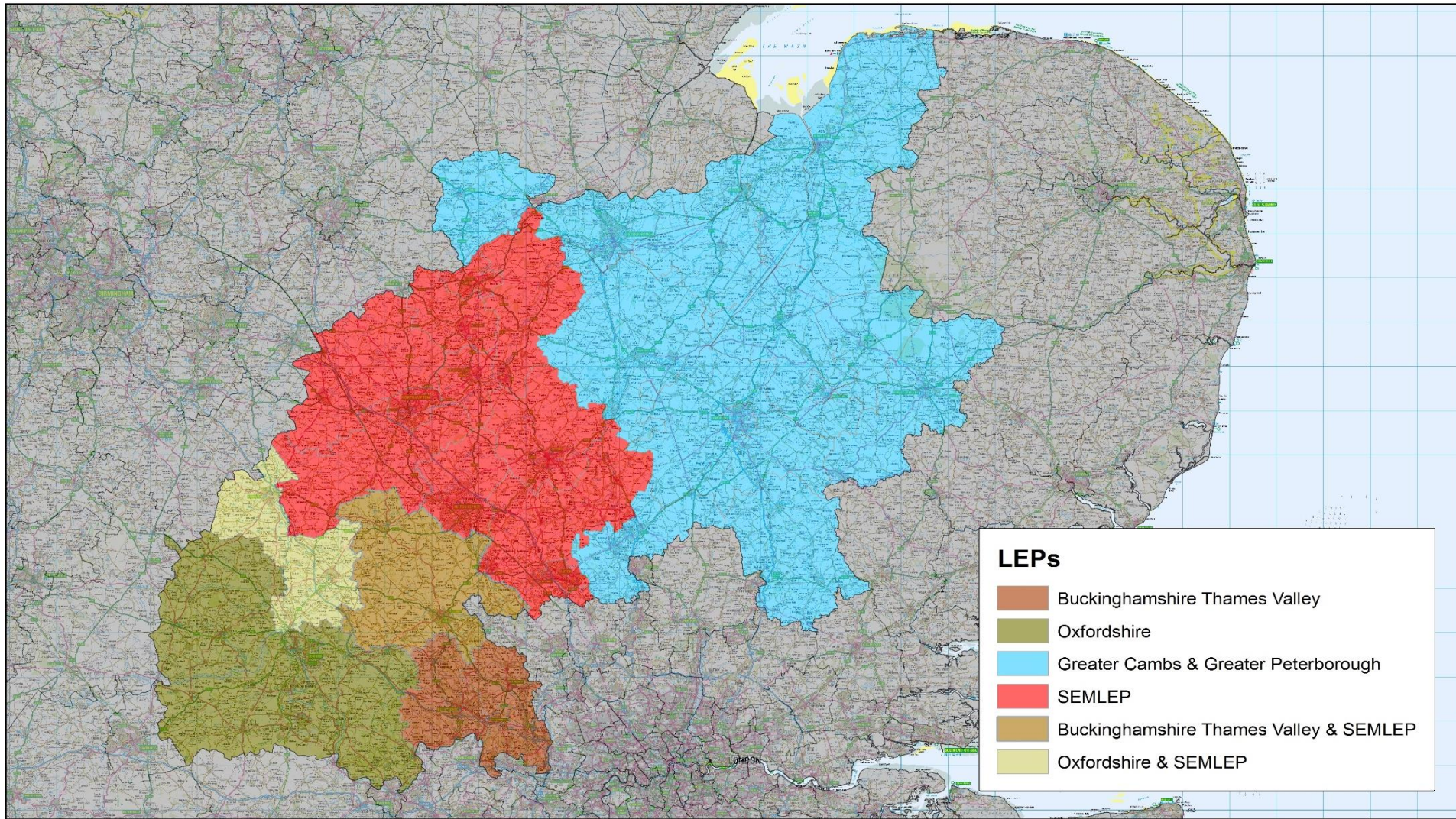
[Source: <http://www.national-charge-point-registry.uk/>]





SEMLEP & the Growth Corridor

The Growth Corridor



Scale: 1:1,100,000 at A4

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0 5 10 20 30 40
Kilometers

Oxford to Cambridge Corridor



Produced by BTVLEP
24 April 2018



Research on clusters suggests that they cannot be created by design, but that they can be supported to overcome growth constraints

- ▶ “Clusters are regarded as exciting, vibrant places where “something in the air” draws together world-class talent and delivers fresh products and innovations to the marketplace. They contribute disproportionately to economic growth.”
- ▶ “Such clusters cannot be created by design. Their origins are largely accidental, and they often evolve to fill market niches that are difficult for governments to anticipate. Typically, their strength lies in the physical co-location and interplay of talented individuals, nimble small businesses, heavyweight corporations, world-class academic centres, willing investors, appropriate infrastructure and supportive local and national government agencies.”
- ▶ “As they grow, these delicate ecosystems invariably face challenges – for instance, talent shortages and patchy infrastructure. Yet, given their inherent complexity, it is often difficult for clusters to organise to address such challenges head-on and thereby achieve their full potential for growth.”

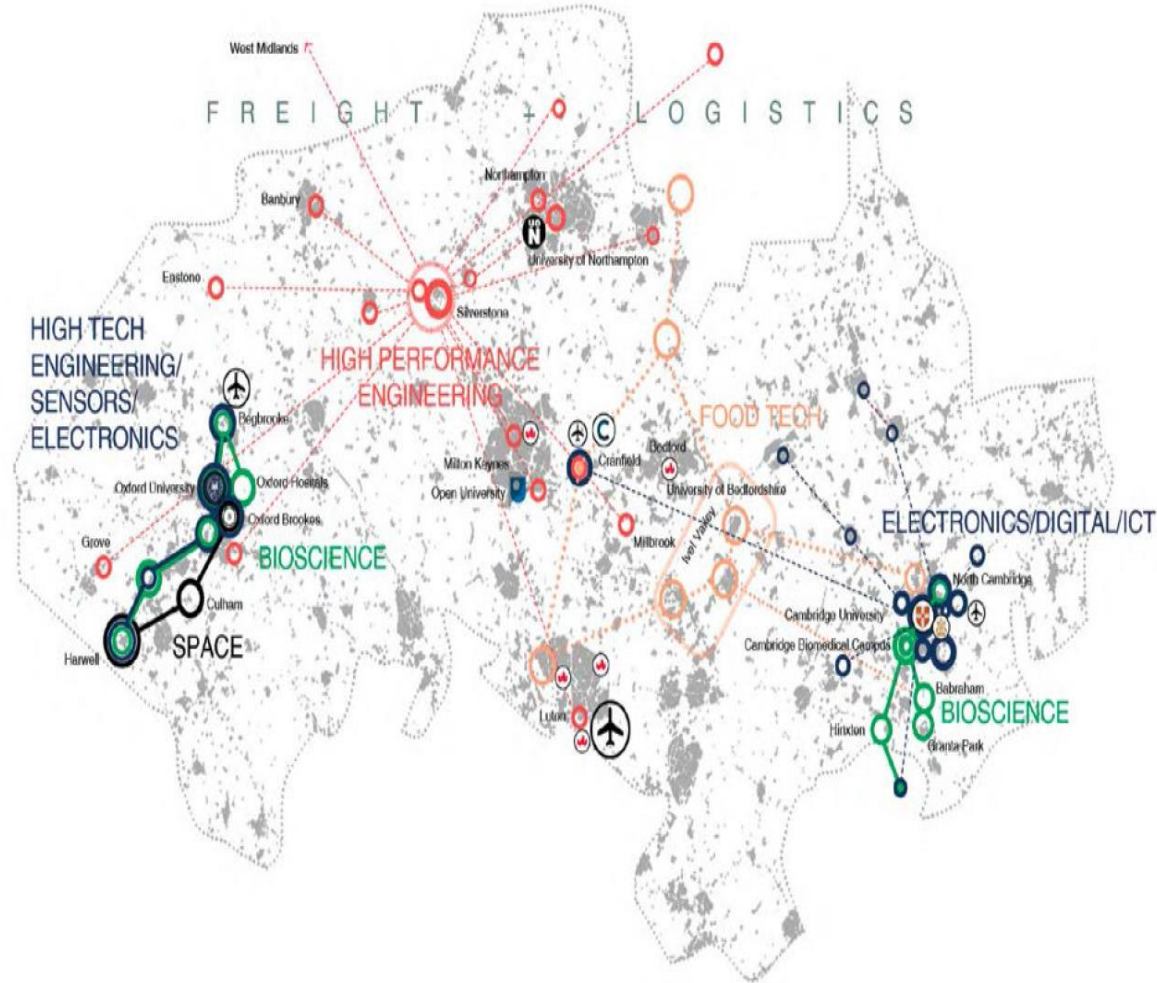


There is a 'cluster of high-tech clusters' within the Growth Corridor



“It is a genuine cluster, and with real potential for growth – largely because of the **quality and wider relevance of the technologies being developed** and applied by many of the firms, but also because the cluster is located in one of the fastest growing and dynamic parts of the UK.

One of the real opportunities is to **make the most of the overlaps between different spheres of influence of specialist expertise**: for example, between the engineering excellence in Northamptonshire, the growing IT strengths in Milton Keynes and Buckinghamshire, and the expertise in areas such as low energy systems in Oxfordshire.”



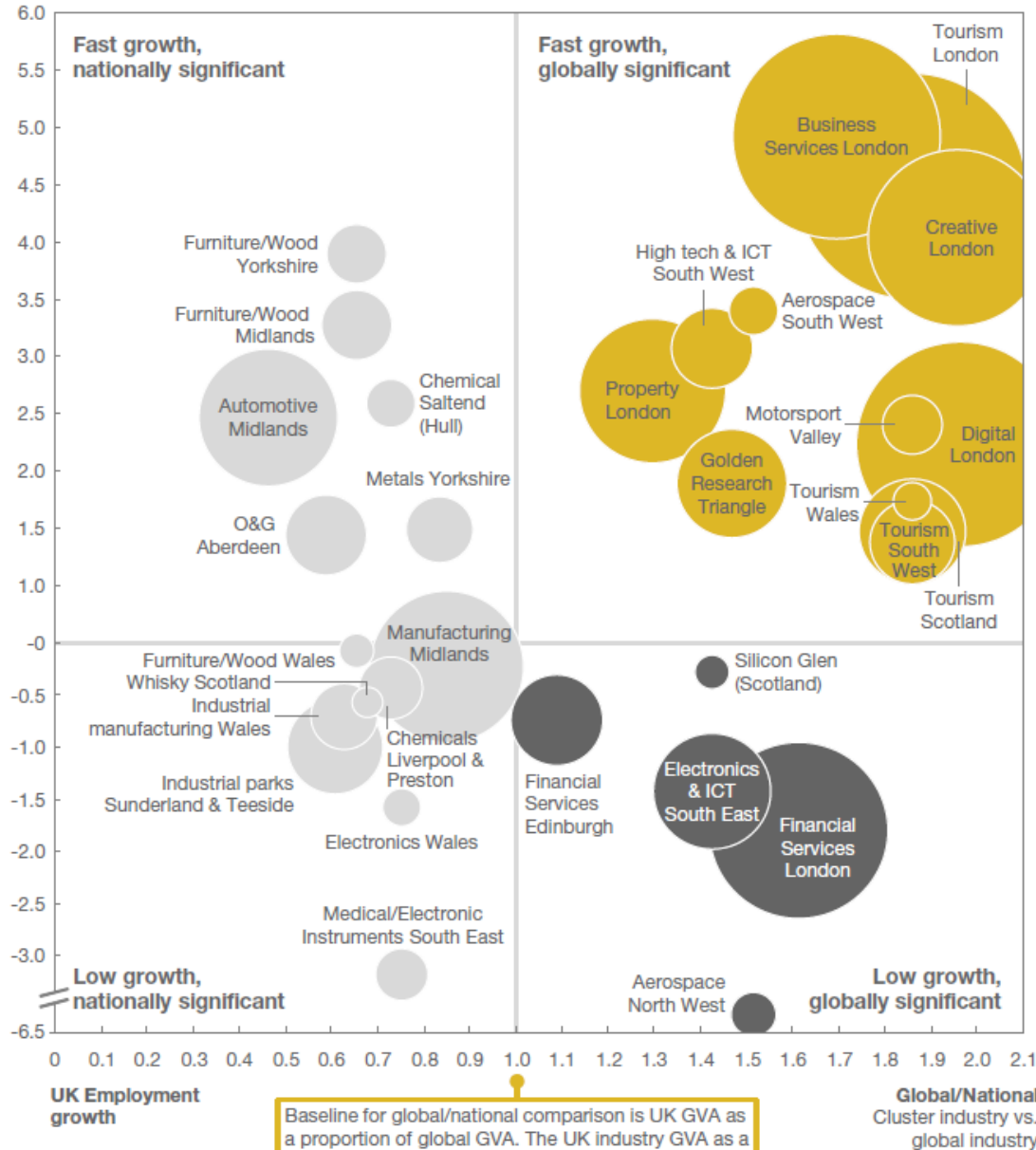
[Sources: SQW, (2016), *The Evolution of the HPTM Cluster*; and NIC, (2017), *Partnering for Prosperity*]

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Employment growth
2009–12 CAGR, %

- Size = 2012 total employment in cluster
- Globally significant, high growth clusters
- Globally significant, low growth clusters
- National clusters



The business activity within these clusters has been identified as both fast growing and globally significant

[Relevant Corridor clusters identified here are Motorsport Valley and Golden Research Triangle and, to some extent, Digital and Creative London]

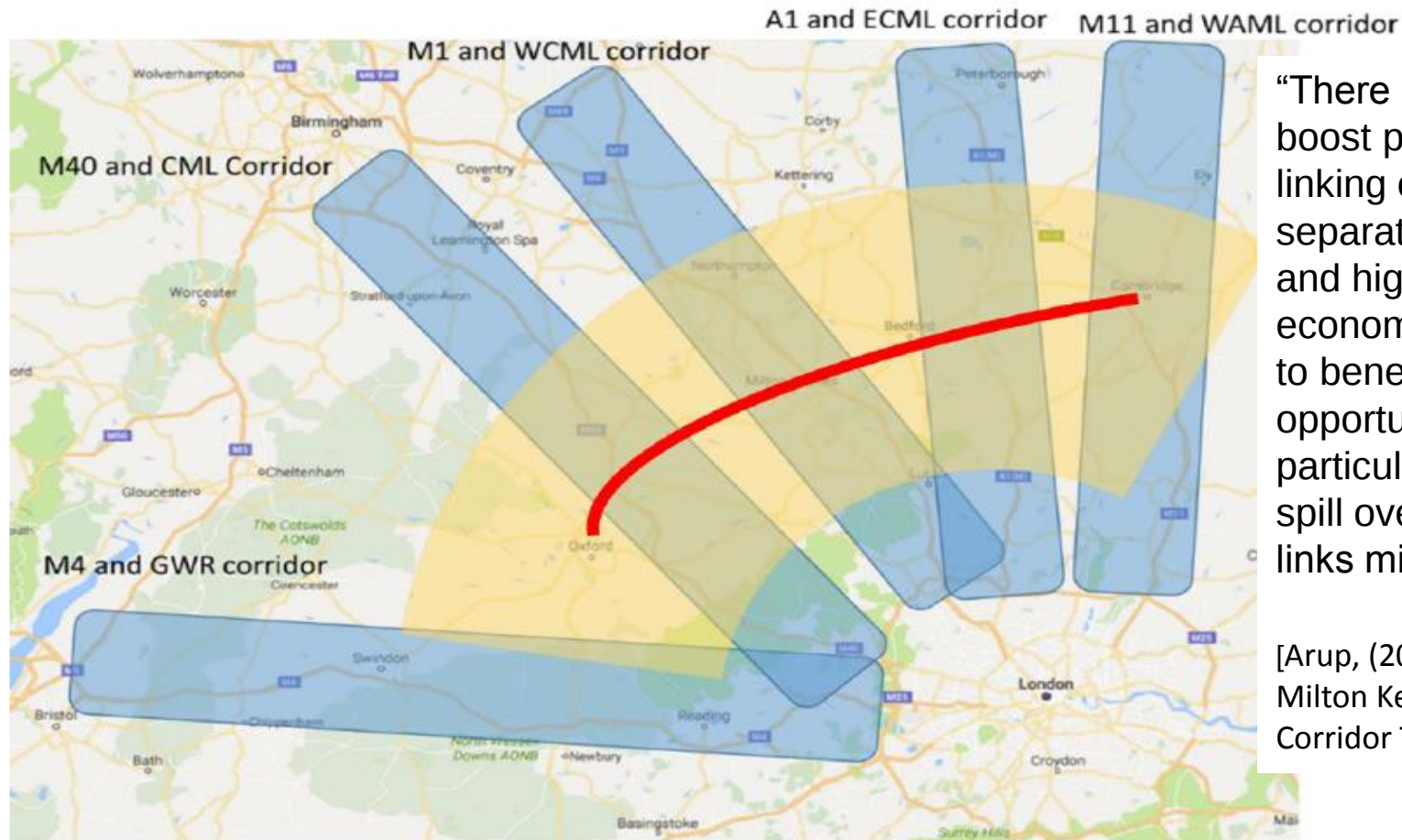
[Source: Centre for Cities and McKinsey & Company, (2014), *Industrial Revolutions: Capturing the Growth Potential*]

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There is significant growth potential from these clusters being better integrated through improved transport links...

Transport Corridors Crossing the Cambridge-Oxford Region with proposed new East-West linkage shown in red (approximate route).



“There is the potential to boost productivity by linking centres with separately strong and high value economies to allow them to benefit from the opportunities, particularly for knowledge spill over – that those links might offer.”

[Arup, (2017), Cambridge Milton Keynes-Oxford Corridor Transport workstream]



...and through joint marketing and promotion to global investors, which may help to prevent commercialisation activity going overseas



Research suggests there are four attributes which help clusters thrive:

- ▶ **Presence:** A reputation as a world-leading cluster and the physical infrastructure and shared technology to support this.
- ▶ **Connectivity:** The right people networks linking the enterprise community.
- ▶ **Capability:** World-class skills and the ability to acquire them locally.
- ▶ **Support:** Financial, regulatory, and professional support designed around the needs of local enterprise.

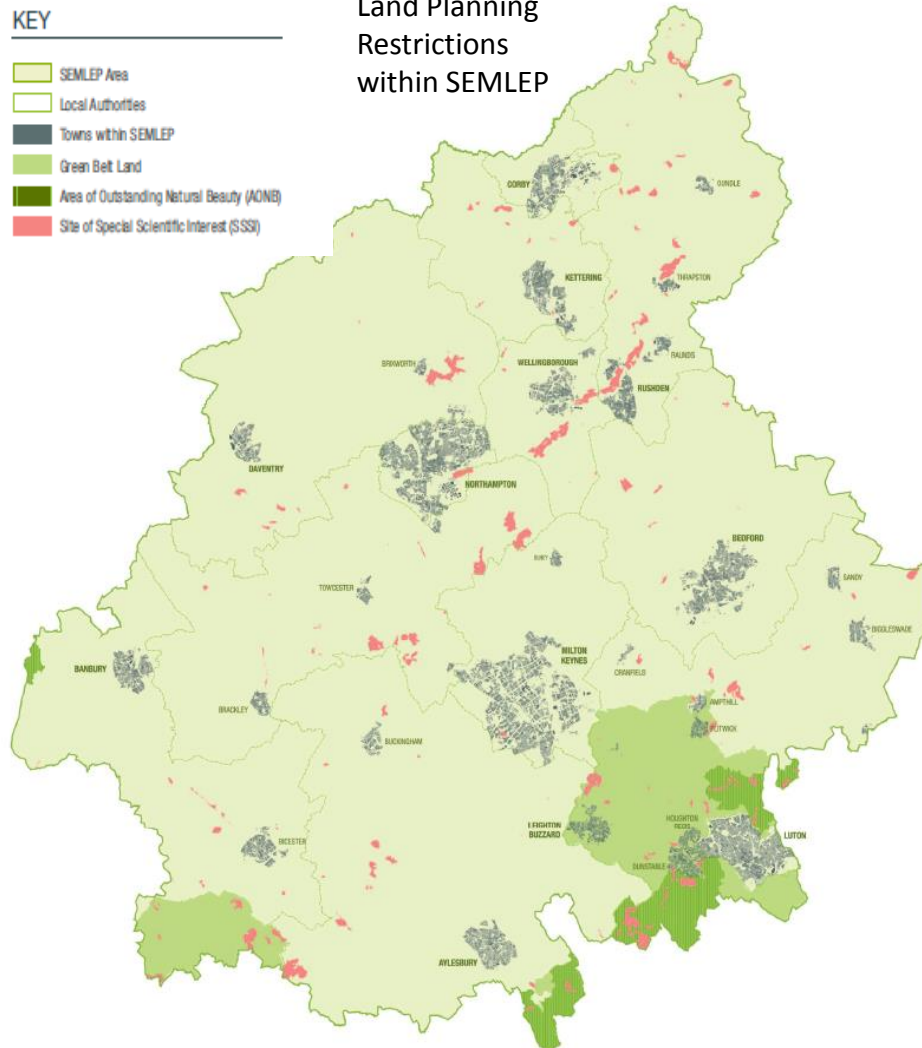
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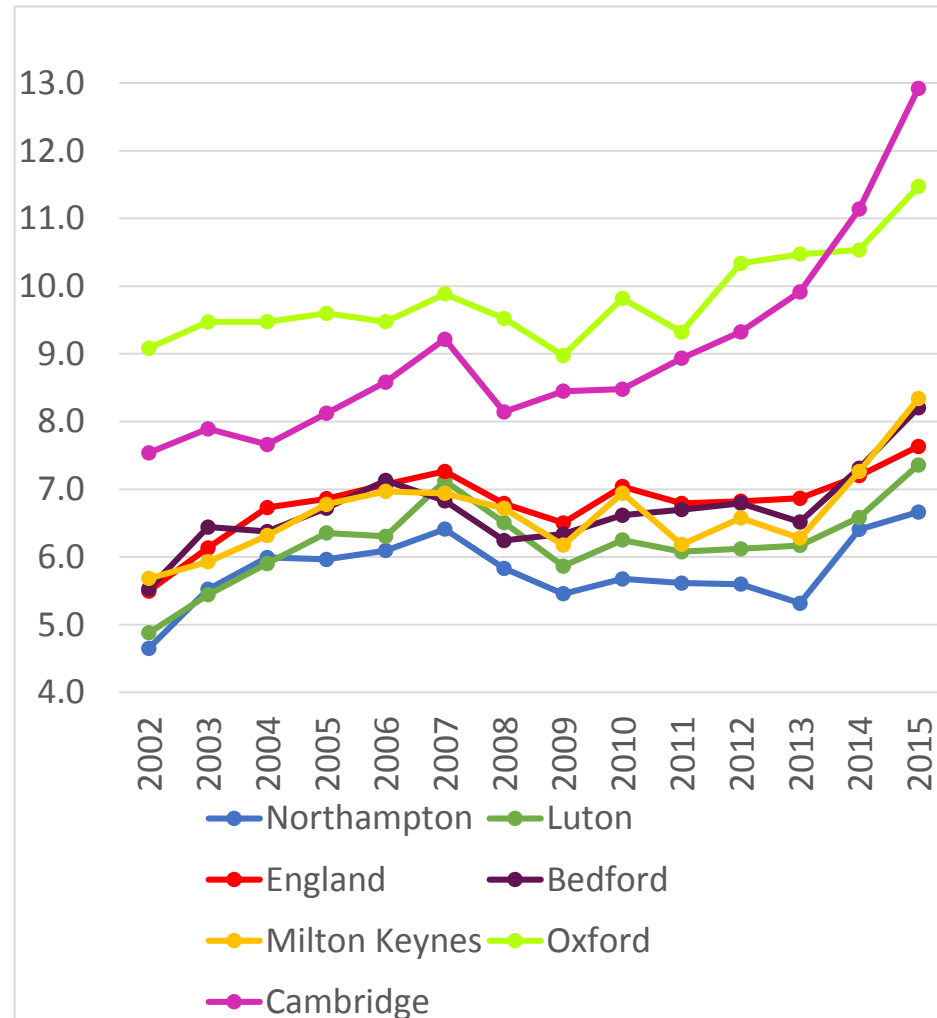
[Source: Centre for Cities and McKinsey & Company, (2014),
Industrial Revolutions: Capturing the Growth Potential]



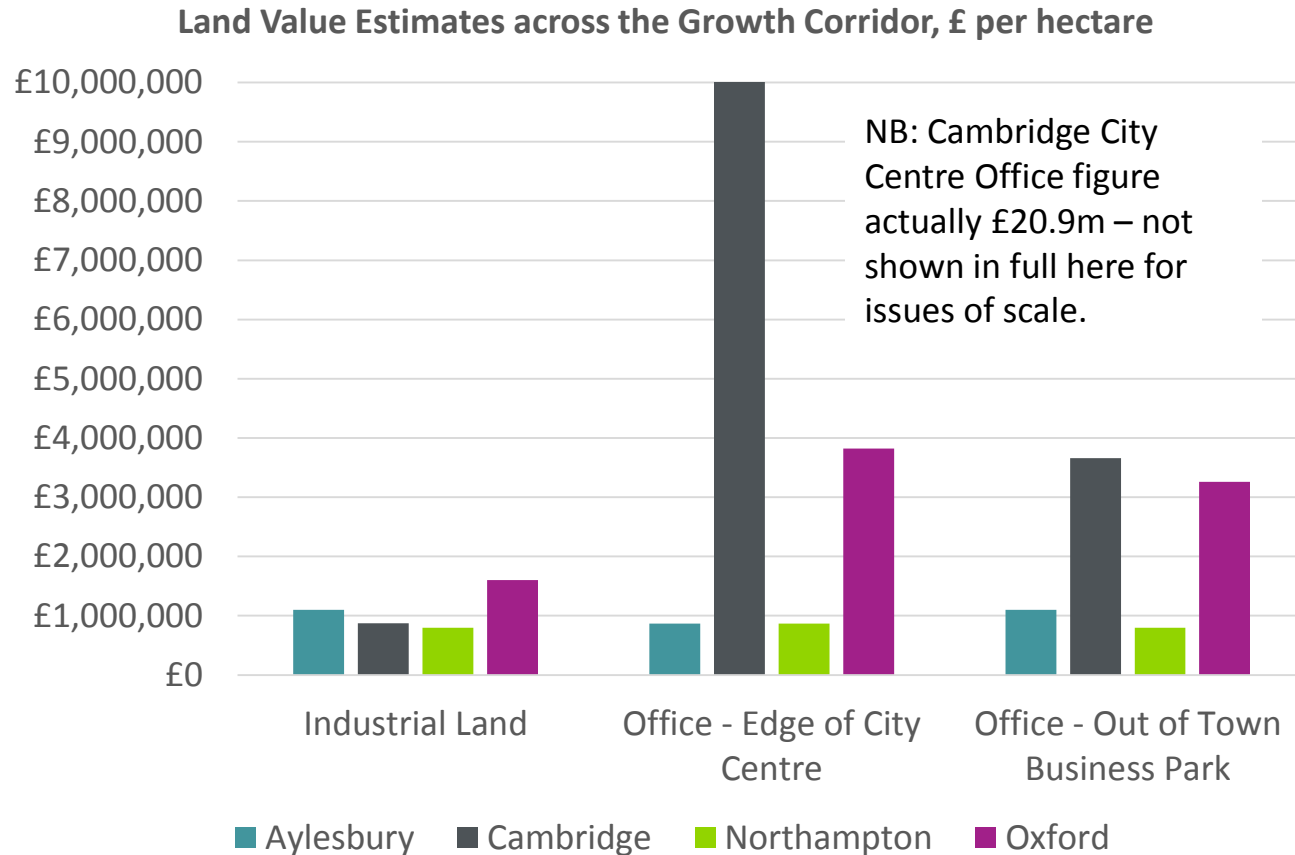
SEMLEP already has commercialisation and testing strengths, and its lack of planning restrictions and relatively affordable land means it could take on more of a commercialisation and testing role within the Corridor (I)



Housing Affordability Ratios, 2002-2015



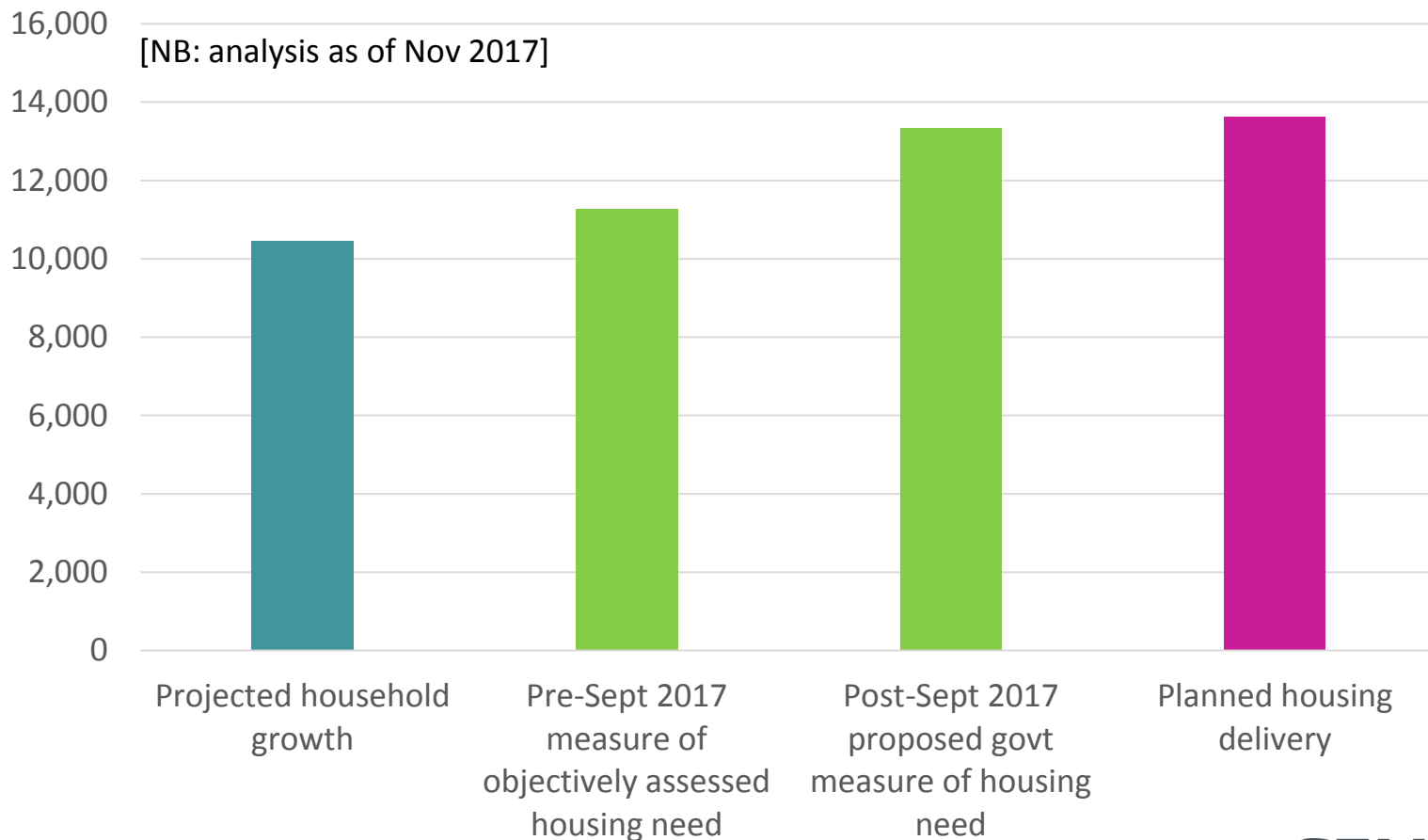
SEMLEP already has commercialisation and testing strengths, and its lack of planning restrictions and relatively affordable land means it could take on more of a commercialisation and testing role within the Corridor (II)





Unlike in other parts of the Corridor, planned housing delivery in SEMLEP is in line with housing need...

Housing Need and Planned Delivery in SEMLEP, 2016/17-2025/26 (annual figures)



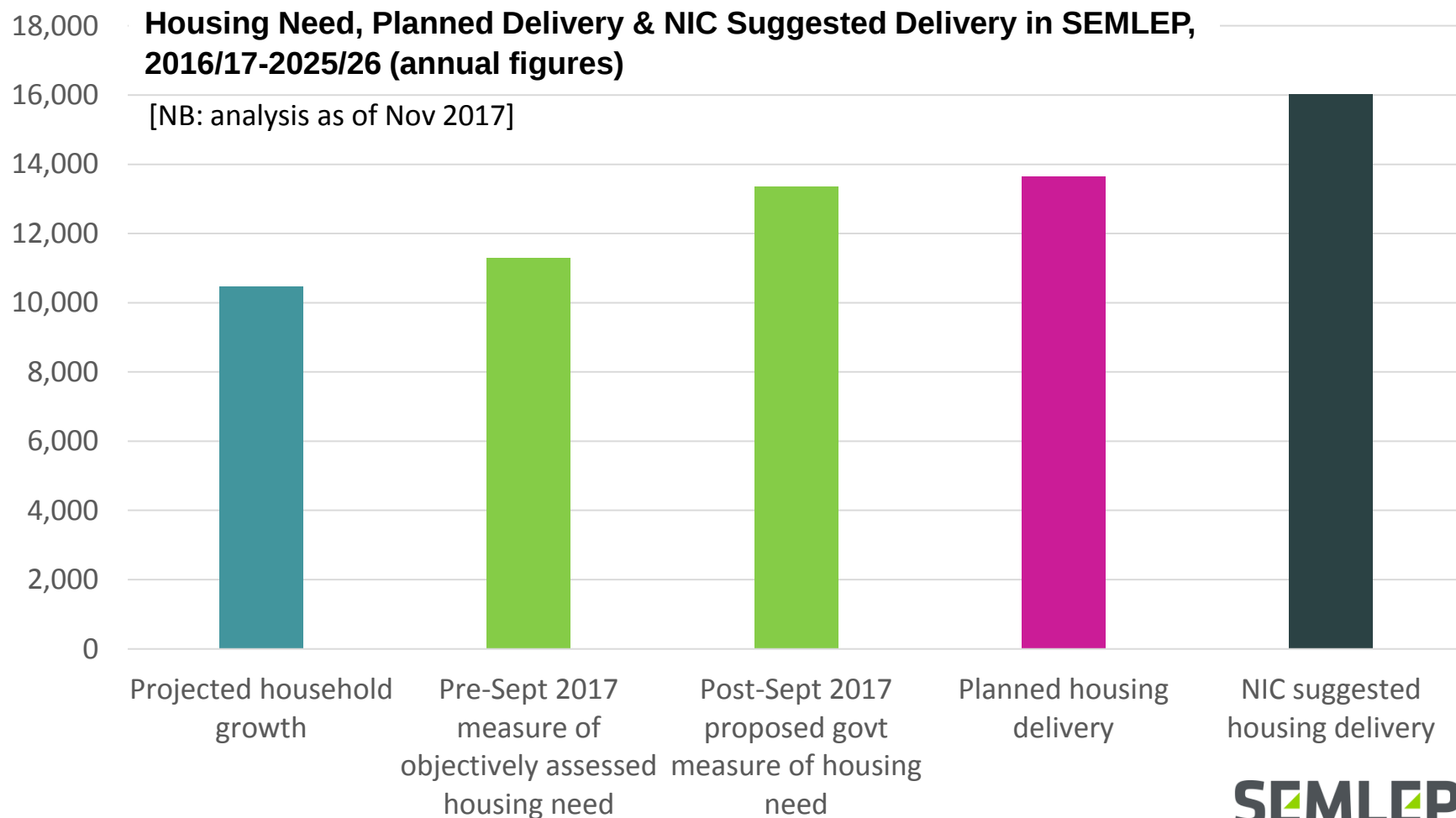
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[Sources: ONS 2014-based household projections; SEMLEP-collated figures from SHMAs & Local Plans; MHCLG, (2017), *Planning for the Right Homes in the Right Places*]



...although delivery stands at c.80-85% of planned levels, and Growth Deals and the Growth Corridor work are likely to see the level of ambition scaled up still further



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[Sources: ONS 2014-based household projections; SEMLEP-collated figures from SHMAs & Local Plans; MHCLG, (2017), *Planning for the Right Homes in the Right Places*; NIC, (2017), *Partnering for Prosperity*]



Such ambition will involve major delivery challenges and require innovative thinking and funding if it is to be successful. However, there are also opportunities from large-scale growth to trial new approaches to meeting future needs.

Some of the issues that need to be tackled/ considered include:

- ▶ Forward funding of infrastructure
- ▶ Reinstated link between population growth and service funding?
- ▶ New – and smarter – approaches to energy provision
- ▶ Modern methods of construction?
- ▶ Future-proofing, including:
 - ▶ Electric charging infrastructure
 - ▶ New 'live-work' models, with supporting Broadband infrastructure
 - ▶ Preparing for the needs of an ageing population



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