D2N2 Local Industrial Strategy

Evidence Base

v1.7 (Including consultation feedback)

November 2019

Context

UK INDUSTRIAL STRATEGY

In November 2017 the UK government published the Industrial Strategy White Paper, its aim is to boost productivity by backing businesses to create good jobs and increase the earning power of people throughout the UK with investment in skills, industries and infrastructure. The White Paper sets out the five foundations which are central to driving productivity:

Ideas – The world's most innovative economy;
People – Good jobs and greater earning power for all;
Infrastructure- A major upgrade to the UKs infrastructure;
Places – Prosperous communities across the UK

Alongside these foundations, the Government identifies four grand challenges which the UK must address and harness to put the country at the forefront of the industries of the future:

Artificial intelligence & the data economy
Future of mobility
Clean growth
Ageing society

A key objective of the Industrial Strategy is to deepen the world leading expertise which the UK possesses and develop interventions, models and collaboration between public and private sector parties which can extend these competitive advantages into other areas and markets. Government has set out that LEPs will lead the development of Local Industrial Strategies for their areas, which will form the basis of an agreed evidence backed strategy to inform future local and national investment and funding.

D2N2 Local Industrial Strategy

The aim for the D2N2 Local Industrial Strategy is to set out how we achieve greater productivity and inclusive growth and define the distinctive long-term economic opportunities for the D2N2 region.
D2N2 has put together a comprehensive evidence base in preparation for the formation of the new Local Industrial Strategy in partnership with Government which will become the shared strategy between Government and the LEP for investment and the development of the D2N2 economy. We are part of the third and final wave of Local Industrial Strategies due to be agreed and in place by March 2020.

Context

The first stage of developing the strategy is to have in place a robust evidence base to underpin the strategy.

LIS Evidence Base

In preparation of the Local Industrial Strategy we have developed a vast and expansive evidence base. This extensive analysis of the D2N2 area's economic strengths and challenges is mapped across the five foundations of productivity as set out in the national Industrial Strategy as well as the four 'Grand Challenges' in the UK's Industrial Strategy.

Creation of the evidence base has only been possible through the sharing of data between partners in order to create a detailed overview of economic landscape of Derbyshire and Nottinghamshire.

Stakeholder consultation is integral to the development of the LIS and D2N2 would appreciate the perspective of its partners on this vital piece of work.
In particular D2N2 would like to illicit opinions on:

- The accuracy of the evidence base in reflecting the current economic landscape of D2N2
- The completeness of the information contained within the evidence base
- The degree of insight the evidence base gives into the <u>five pillars</u> of the UK National Industrial Strategy and the <u>four grand challenges</u> facing the UK.

Feedback should be with D2N2 by 11th October 2019, in order to feed into the development of the LIS.
For further information and to feedback contact D2N2 Strategy Analyst, Vladimir Epuri, at vladimir.Epuri@d2n2lep.org

Next steps and Timetable.
It is our intention to produce a draft strategy by the end of December 2019 with a view to agreeing a strategy with Government by March 2020.

Alongside the consultation on the evidence base we are working with partners to develop the priorities for the draft strategy.

Acknowledgements

This Evidence pack, its original analysis and partner contributions, have been collated and edited by Vladimir Epuri, D2N2 Strategy Analyst. We would like to thank all partners for their contributions to this evidence base, in particular:

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Grand Challenge: Clean Growth
- SWOT analysis
- CO2 emissions by end-user groups
- CO2 sinks
- Energy demand and renewable energy generation
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- Energy and low carbon economy estimates
- Innovate UK energy-related awards
- Research assets and strengths

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- Major Road Network
- Digital infrastructure
- Electricity infrastructure and demand projections
- Housing stock and affordability

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- Business R&D
- HE – business interaction in innovation
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Grand Challenge: Future of Mobility
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- Correlation with earnings
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Sectors
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- 5-year GVA growth (2012-2017)
- Growth – relative share matrix by sector group
- Sectoral strengths and opportunities
- Priority sectors
- Sector overviews

People
- Demographics (population estimates, projections by age and county; ethnicity, migration)
- Labour market (inactivity, employment, unemployment)
- Skills pipeline
- Skills profile
- Occupational profile
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- Earnings and Living wage
- Automation and retraining needs
- Social mobility

Grand Challenge: AI and Data
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- Innovation activity in D2N2

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- Index of Multiple Deprivation

Grand Challenge: Ageing Society
- Population projections
- Ageing workforce
- Healthy life expectancy
- Inequality in life expectancy

Derby
Derbyshire
Nottingham
Nottinghamshire

D2N2
Derby, Derbyshire, Nottingham and Nottinghamshire

D2N2 transport network

	HS2
	Existing railway line
	Motorway
○	Motorway junction
	A road
	Neighbouring local authority boundary
	D2N2 boundary
○	Town
✈	Airport

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		Rank
Area: 4,784 sq. km		12
Population: 2,196,100		5
Working age population: 1,358,100		5
Average self-containment		8
GVA: £46.6bn		9
Exports (goods): £12.3bn		6
Local Authorities: 17+2		3
LGF allocation: £257.49m		15
ESIF allocation: €249m		8

Economy Summary

D2N2 added **£46.6 billion** to the UK economy in 2017 ranking **4th** among LEPs outside London and the South East. Our ambition is to reach **£70 billion** by 2030.

Manufacturing generates **£8 billion** in Gross Value Added, ranking **2nd** outside London and the South East.

Professional, Scientific & Technical Activities and Visitor Economy saw stronger expansion than nationally, growing by **40%** and **46%**, respectively, over the last 5 years.

Labour productivity gap is persisting with GVA per hour worked **14% below** the UK average. This gap widened by 2.6 percentage points over the last 5 years.

D2N2
Derby
Derbyshire
Nottingham
Nottinghamshire

D2N2 Economy is 4th largest outside London and the South East region. Nottingham and Derby generate 36% of the GVA, while Derbyshire and Nottinghamshire contribute 33% and 32%, respectively.

£46.6bn
Gross Value Added*

17.1%
Nominal growth (2012-2017)

963.6K
Employment**

LEP Ranking (top 10 excluding London and South East)

Leeds CR	Gr. Manchester	Gr. Birmingham & Sol...	D2N2	Gr. Cambridge & Gr. P.	North East	Hertfordshire	New Anglia	Heart of the SW	Sheffield CR
£69.6bn	£66.4bn	£51.3bn	£46.6bn	£43.6bn	£40.1bn	£36.7bn	£36.4bn	£35.3bn	£35.0bn
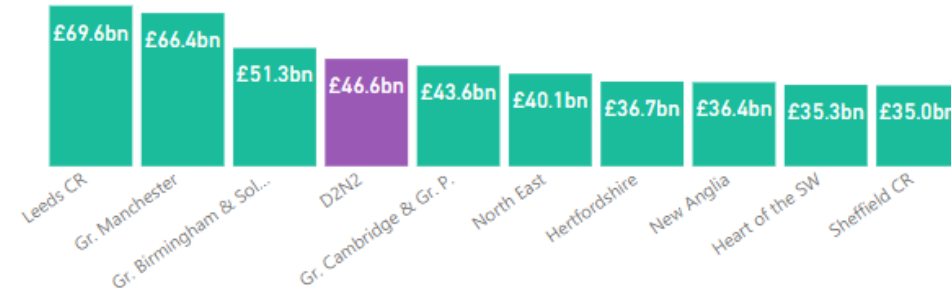
GVA by Local Authority

● Nottinghamshire ● Derbyshire ● Cities

Ashfield 5.9%
Bassetlaw 4.7%
Broxtowe 4.6%
Gedling 3.1%
Mansfield 3.3%
Newark and Sherwood 5.0%
Rushcliffe 5.2%
Amber Valley 5.7%
Bolsover 3.8%
Chesterfield 4.8%
Derbyshire Dales 3.3%
Erewash 3.7%
High Peak 3.3%
North East Derbyshire 2.7%
South Derbyshire 5.3%
Derby 14.8%
Nottingham 20.8%
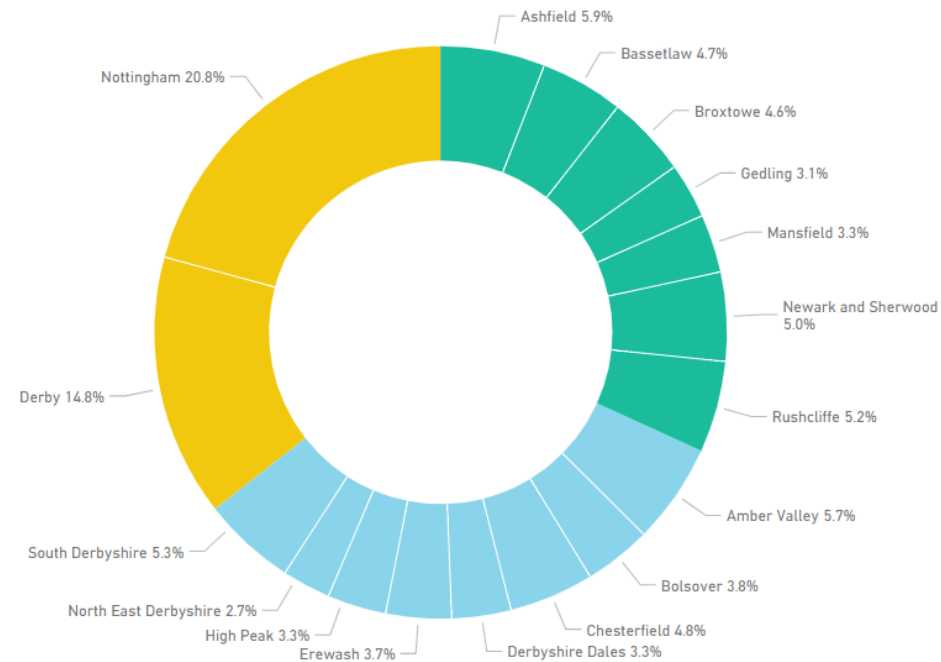
D2N2 is forecast to expand by **£7.6 billion** and **35,000 jobs** by 2030.

GVA and Employment gain forecasts by LEP (2019-2030)

● GVA gain forecast ● Employment gain forecast

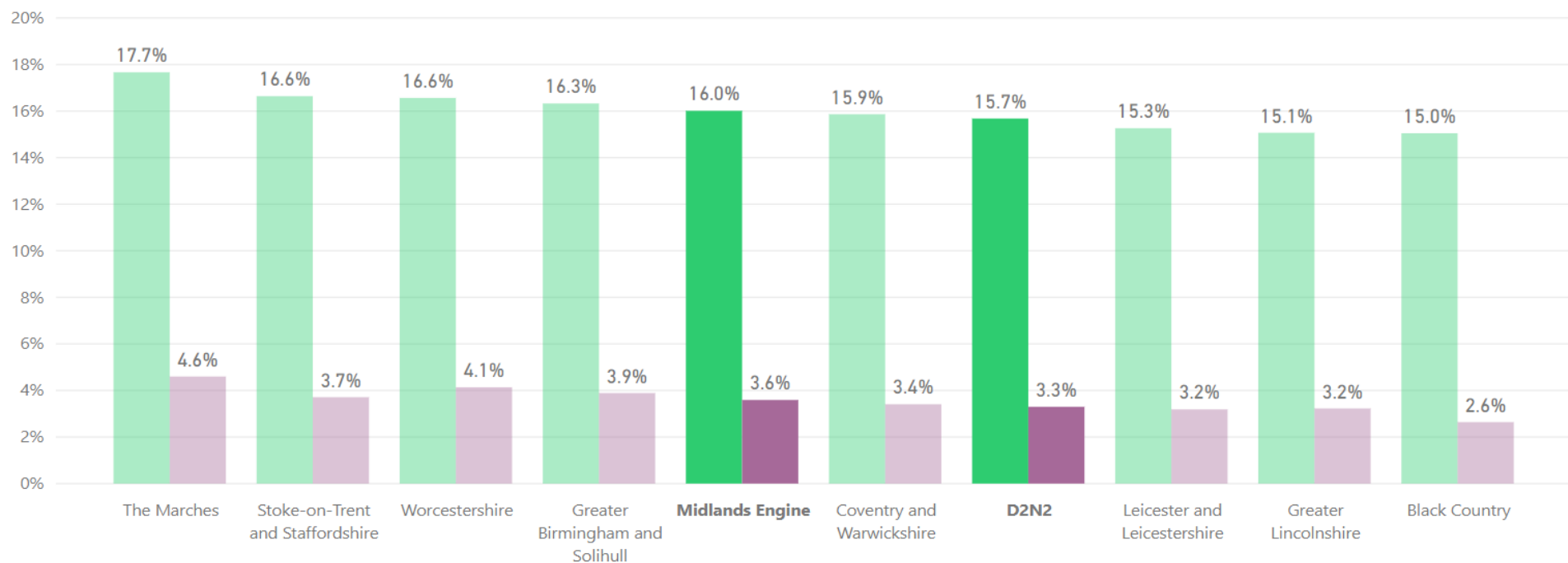| LEP	GVA	Employment
Greater Birmingham and Solihull	8.6bn	41.7K
D2N2	7.6bn	35.1K
Coventry and Warwickshire	4.2bn	17.9K
Leicester and Leicestershire	4.0bn	16.7K
Stoke-on-Trent and Staffordshire	3.8bn	20.2K
Black Country	3.4bn	13.8K
Greater Lincolnshire	3.2bn	16.2K
The Marches	2.6bn	16.7K
Worcestershire	2.3bn	12.9K

Source: D2N2 analysis of Cambridge Econometrics forecasts for Midlands Engine

Projections

D2N2 growth is forecast to be slightly below the Midlands Engine average.

GVA and Employment growth forecasts (%) by LEP (2019-2030)

● GVA growth forecast ● Employment growth forecast

LEP	GVA growth forecast	Employment growth forecast
The Marches	17.7%	4.6%
Stoke-on-Trent and Staffordshire	16.6%	3.7%
Worcestershire	16.6%	4.1%
Greater Birmingham and Solihull	16.3%	3.9%
Midlands Engine	16.0%	3.6%
Coventry and Warwickshire	15.9%	3.4%
D2N2	15.7%	3.3%
Leicester and Leicestershire	15.3%	3.2%
Greater Lincolnshire	15.1%	3.2%
Black Country	15.0%	2.6%

November 2019

Source: D2N2 analysis of Cambridge Econometrics forecasts for Midlands Engine

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Health & Social Work, Information & Communication, and Trade sectors are forecast to grow output value faster than other sectors.

GVA growth forecasts (%) in D2N2 and Midlands Engine (2019-2030)

● D2N2 GVA growth forecast ● Midlands Engine GVA growth forecast
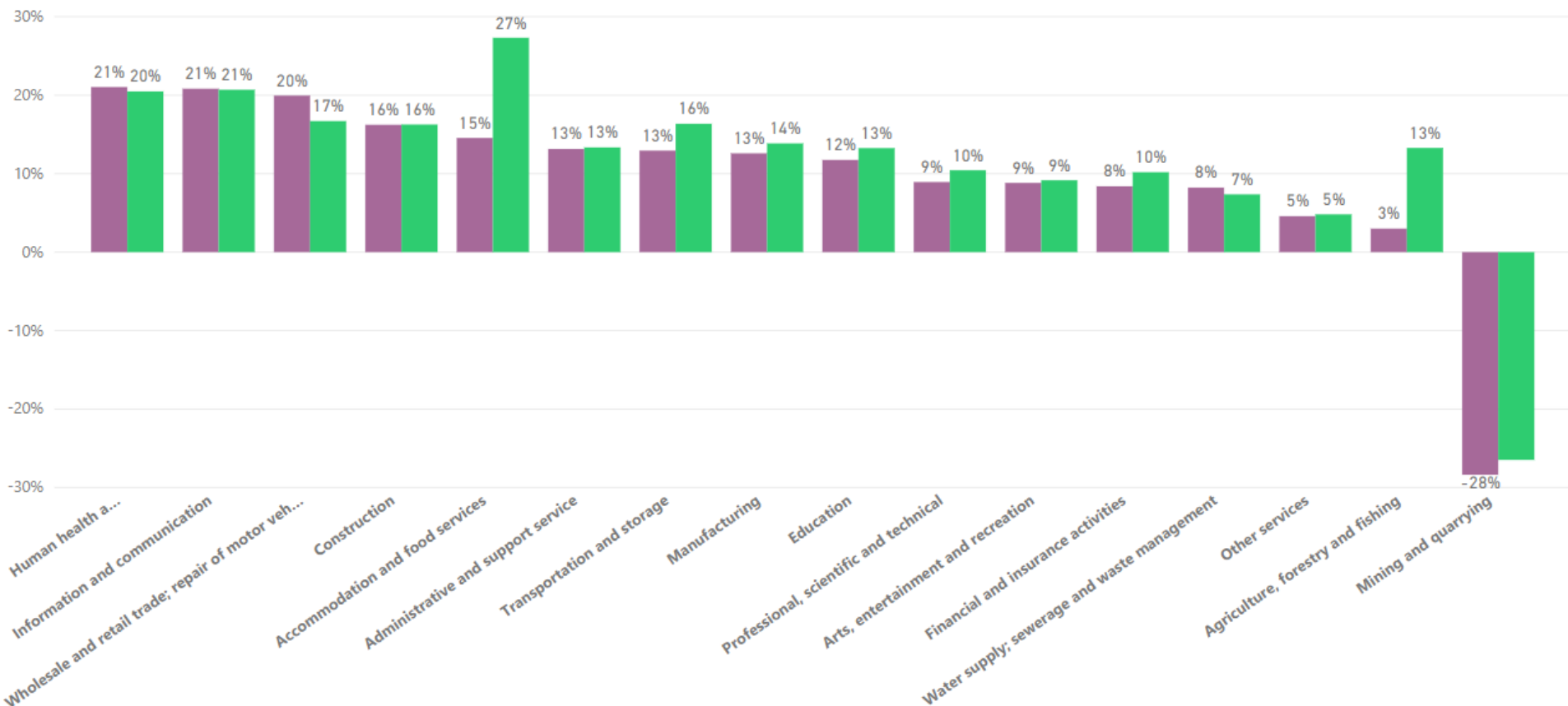
Source: D2N2 analysis of Cambridge Econometrics forecasts for Midlands Engine
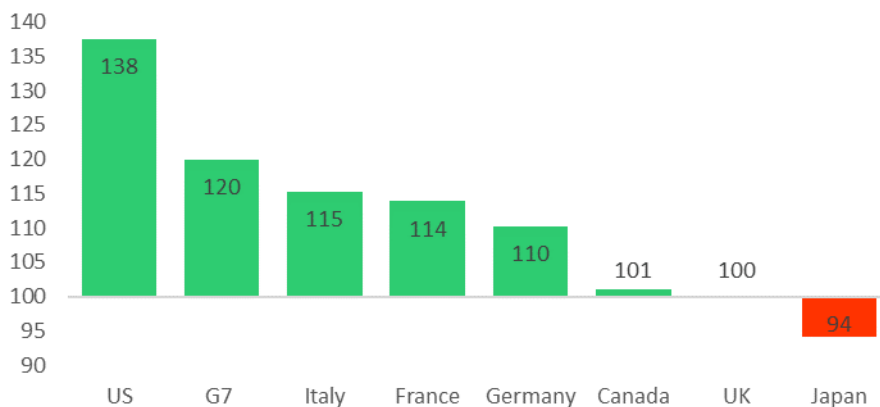
Productivity

- International peers
- D2N2 economy
- Sectoral differences
- Spatial differences
- Correlation with earnings
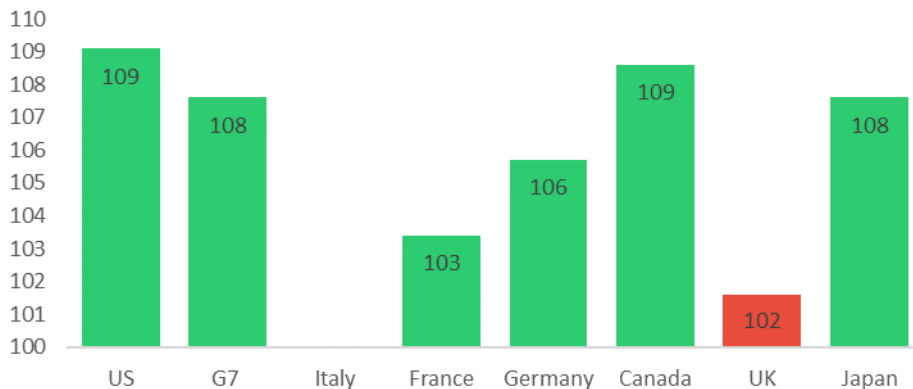- Firm-level productivity

UK productivity levels and growth are lower than for many of its international peers

GVA per hour worked, 2016. UK=100

US	138
G7	120
Italy	115
France	114
Germany	110
Canada	101
UK	100
Japan	94

20%
below G7 levels

GVA per hour worked growth, 2007-16. 2007=100

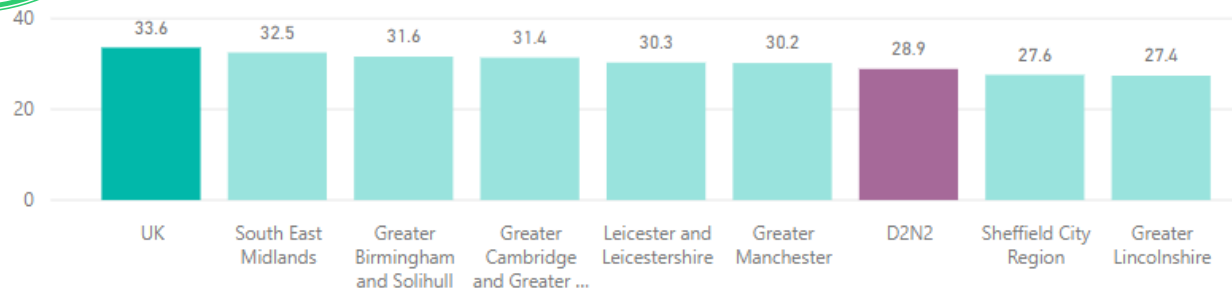|	
US	109
G7	108
Italy	
France	103
Germany	106
Canada	109
UK	102
Japan	108

6% points
lower growth than G7 average

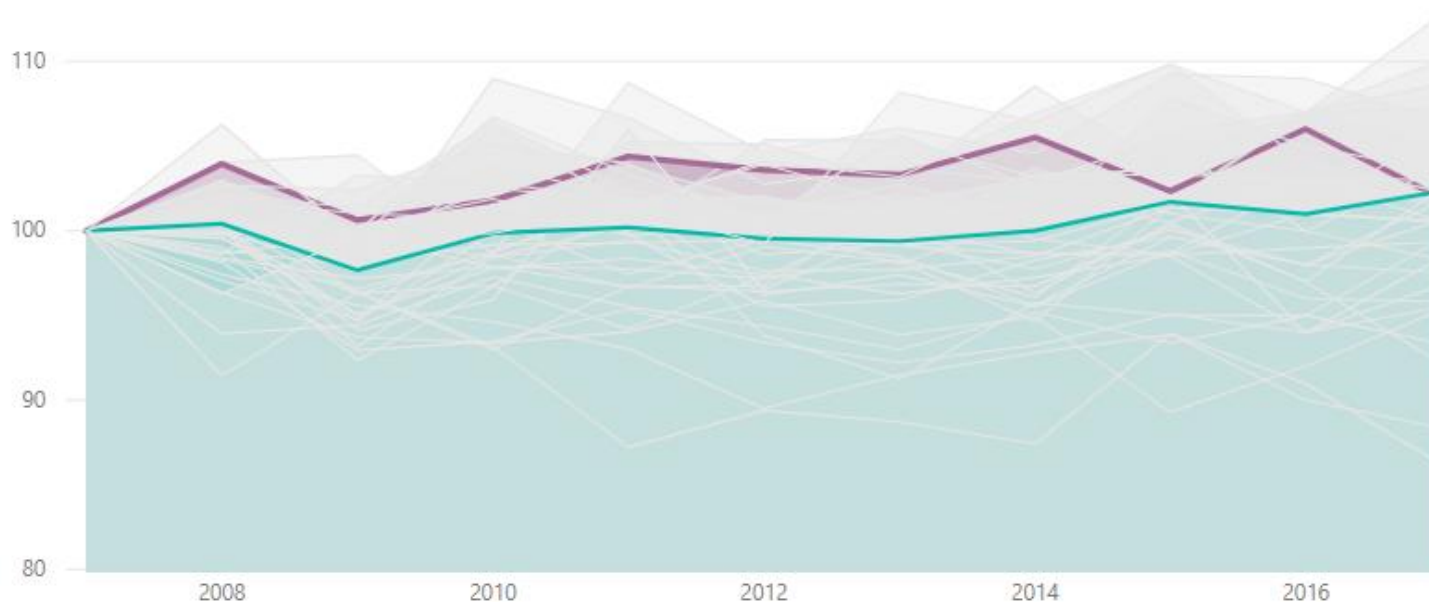Source: ONS, International comparison of labour productivity

Productivity analysis indicates that D2N2 productivity is **below the national average** and **has been growing slightly slower than nationally**

Nominal GVA per hour (2017)

UK	33.6
South East Midlands	32.5
Greater Birmingham and Solihull	31.6
Greater Cambridge and Greater ...	31.4
Leicester and Leicestershire	30.3
Greater Manchester	30.2
D2N2	28.9
Sheffield City Region	27.6
Greater Lincolnshire	27.4

14%
below the national average

Productivity index (real GVA per hour)

D2N2: 1.8% growth since 2007

UK: 2.3% growth since 2007

Note: Productivity index shows real (inflation adjusted) trend relative to 2007. Source: ONS, Regional and Sub-regional Productivity, Feb 2019 release
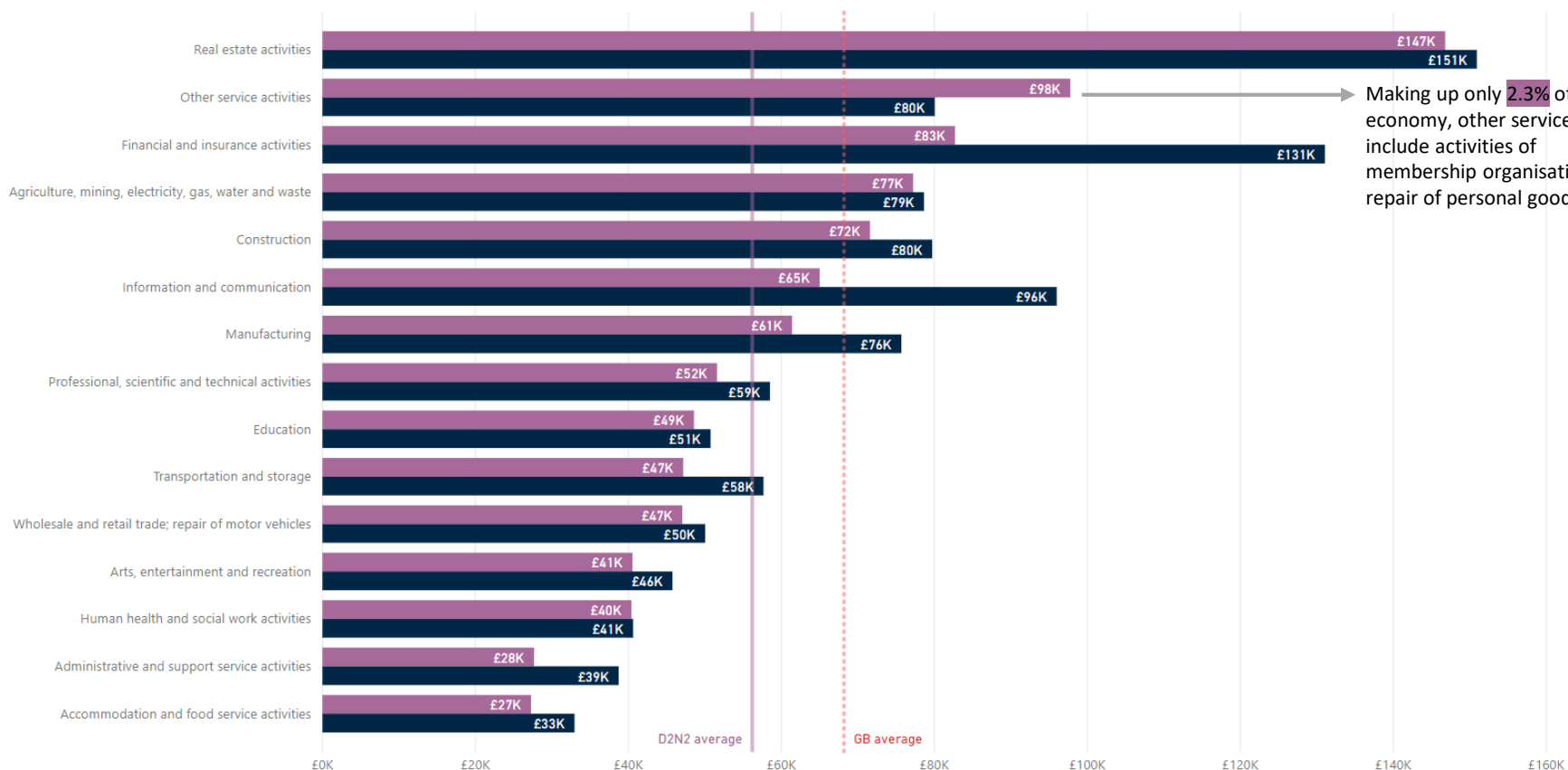
Most sectors **lag behind** national productivity levels.

Productivity:
Sectors

D2N2 PRODUCTIVITY BY SECTOR GROUP

● D2N2 ● GB

Sector	D2N2	GB
Real estate activities	£147K	£151K
Other service activities	£98K	£80K
Financial and insurance activities	£83K	£131K
Agriculture, mining, electricity, gas, water and waste	£77K	£79K
Construction	£72K	£80K
Information and communication	£65K	£96K
Manufacturing	£61K	£76K
Professional, scientific and technical activities	£52K	£59K
Education	£49K	£51K
Transportation and storage	£47K	£58K
Wholesale and retail trade; repair of motor vehicles	£47K	£50K
Arts, entertainment and recreation	£41K	£46K
Human health and social work activities	£40K	£41K
Administrative and support service activities	£28K	£39K
Accommodation and food service activities	£27K	£33K

Making up only 2.3% of the economy, other services include activities of membership organisations & repair of personal goods

D2N2 average   GB average

£0K £20K £40K £60K £80K £100K £120K £140K £160K

15

There is significant variation in productivity performance across D2N2. Areas to the **south of the cities** and **along M1** record better performance

Productivity by Local Authority District

Mansfield £45,000 | Min — Max | South Derbyshire £83,000

High Peak
Bassetlaw
Chesterfield
Bolsover
North East Derbyshire
Mansfield
Derbyshire Dales
Newark & Sherwood
Ashfield
Amber Valley
Gedling
Broxtowe
Nottingham
Erewash
Derby
Rushcliffe
South Derbysire
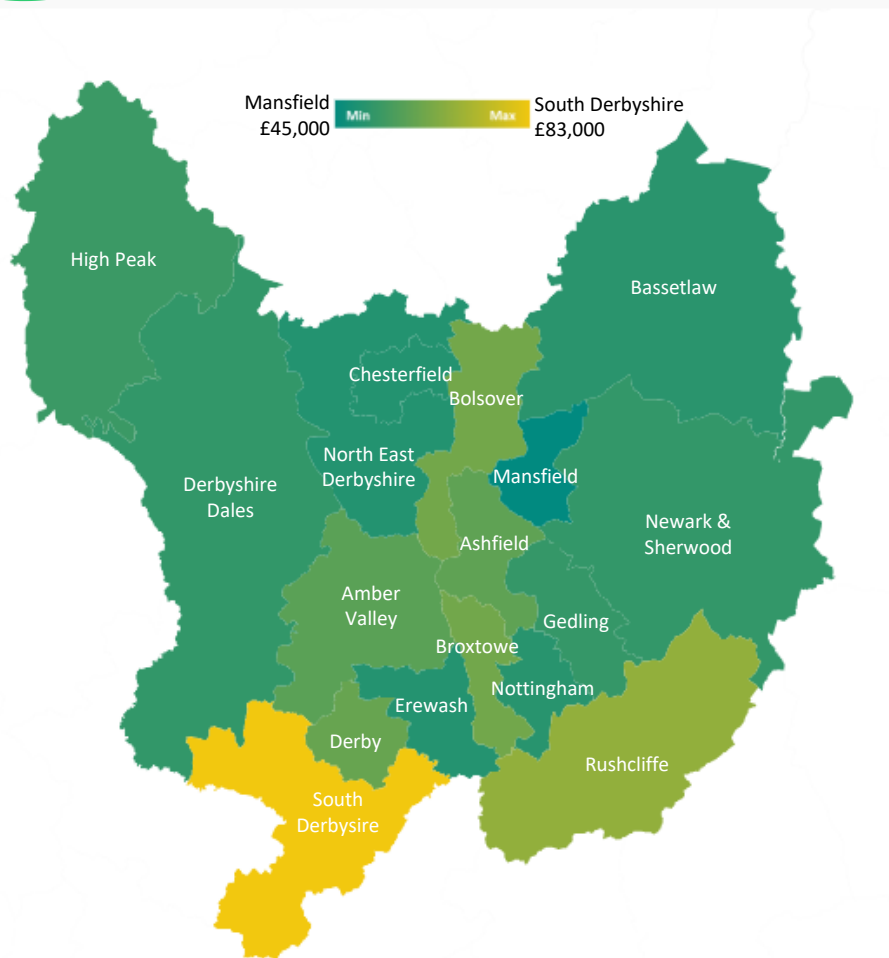
| £56,197	£56,919	£68,193
D2N2	East Midlands	Great Britain

- South Derbyshire outperforms the national benchmark by 18%

- Rushcliffe, Bolsover, Broxtowe, Ashfield and Amber Valley are above D2N2 average

- Mansfield's productivity is 20% below D2N2 average

Note: Productivity is calculated as GVA per full-time equivalent employment (includes full-time employees, adjusted part-time employees and working owners). Source: Regional gross value added (balanced) local authority (CVM Pounds), 2017; NOMIS, BRES, 2017

In D2N2 the gap in productivity is not at the top or the bottom. There are more businesses in D2N2 with productivity a little below the average and too few with productivity just above


Firm-level productivity distiribution
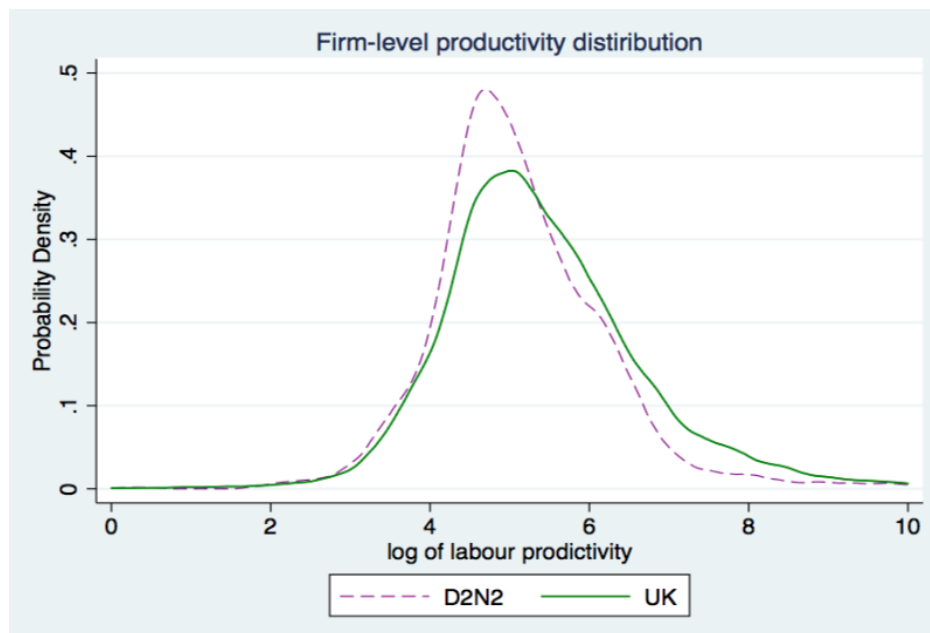
Aggregate productivity can be calculated as the weighted sum of each individual businesses within an economy, where these weights are measured by the relative size (sales) of each firm. Productivity within the D2N2 region therefore depends both on the productivity of each individual business and the weights assigned to each firm

Regions with high productivity are typically characterised as having many productive firms that are large, and unproductive ones that are small. Unproductive regions have more productive firms that are small and unproductive ones that are large. This correlation between size and productivity is known as allocative efficiency.

In D2N2 the gap in productivity is not at the top or the bottom. There are more businesses in D2N2 with productivity a little below the average and too few with productivity just above

Weighted Average Productivity (log), 2015
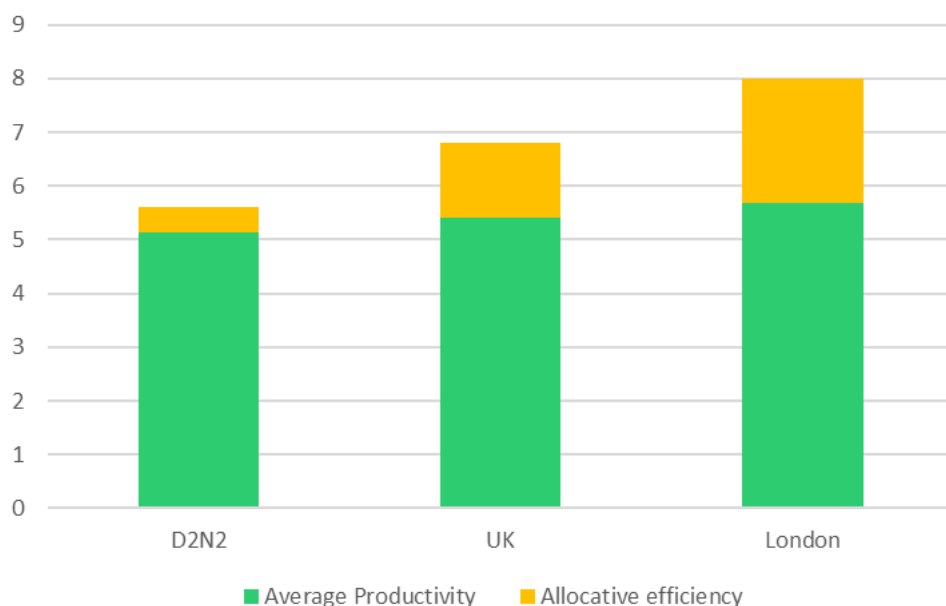
Considering whether the D2N2 economy is held back by the sectoral-mix of its economy, by the productivity of the average firm, or by low allocative efficiency we found that all three act to lower aggregate D2N2 productivity. Ranking them we find the negative effect of low allocative efficiency to be stronger than the effect from the lower productivity of the average firm, with both of these having a much stronger effect than the industrial composition (1 percentage point). As productive firms can be found in all industries, industrial composition matters much less than is commonly thought.

Increasing productivity of the average firm would close the gap by 5 percentage points.

For the aggregate what also matters is whether the productive businesses are small or large
This is known as allocative efficiency. This value is lower in this region than elsewhere. Increasing this to the UK average would close the gap by 12 percentage points.

Productivity: business-level

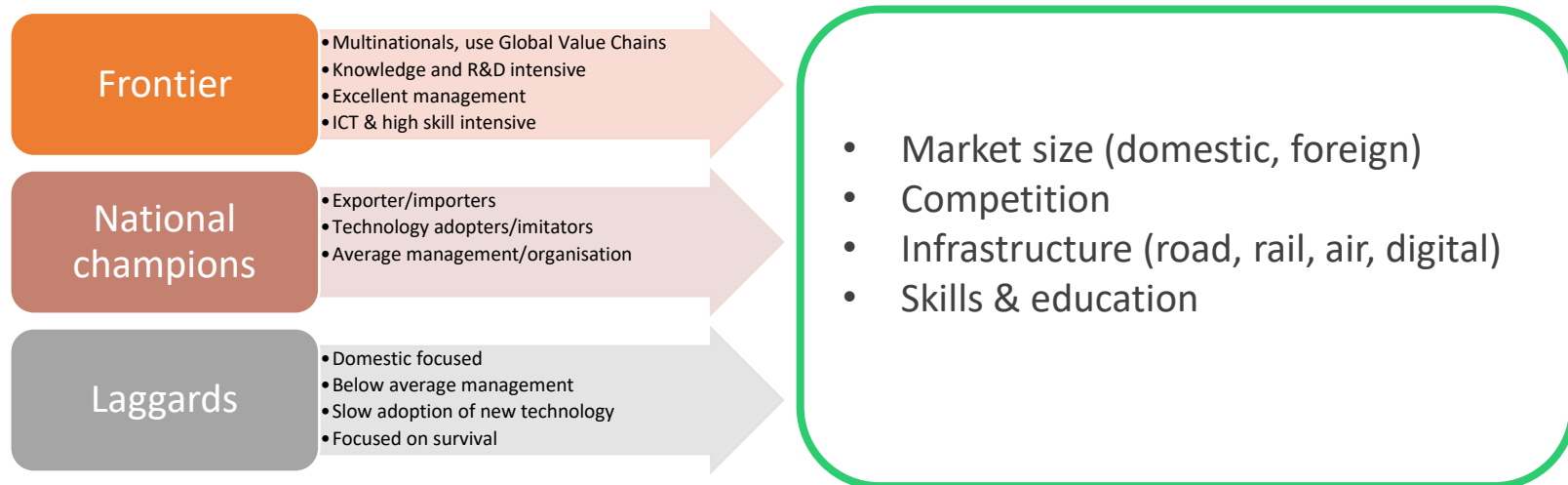# We can improve productivity by focusing on business-level (within-firm) and business environment (between-firm) factors.

Within Firm	Between Firm
• Creation of new technologies • Adoption of new technologies • Management Practice and Organisation • Efficient use of these technologies	• Reallocation of market shares to more productive firms • That productive firms have opportunity & finance to survive and grow • Entry of new productive firms

Frontier
- Multinationals, use Global Value Chains
- Knowledge and R&D intensive
- Excellent management
- ICT & high skill intensive

National champions
- Exporter/importers
- Technology adopters/imitators
- Average management/organisation

Laggards
- Domestic focused
- Below average management
- Slow adoption of new technology
- Focused on survival

- Market size (domestic, foreign)
- Competition
- Infrastructure (road, rail, air, digital)
- Skills & education

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

Sectors

- Sector group GVA and Employment
- 5-year GVA growth (2012-2017)
- Growth – relative share matrix by sector group
- Sectoral strengths and opportunities
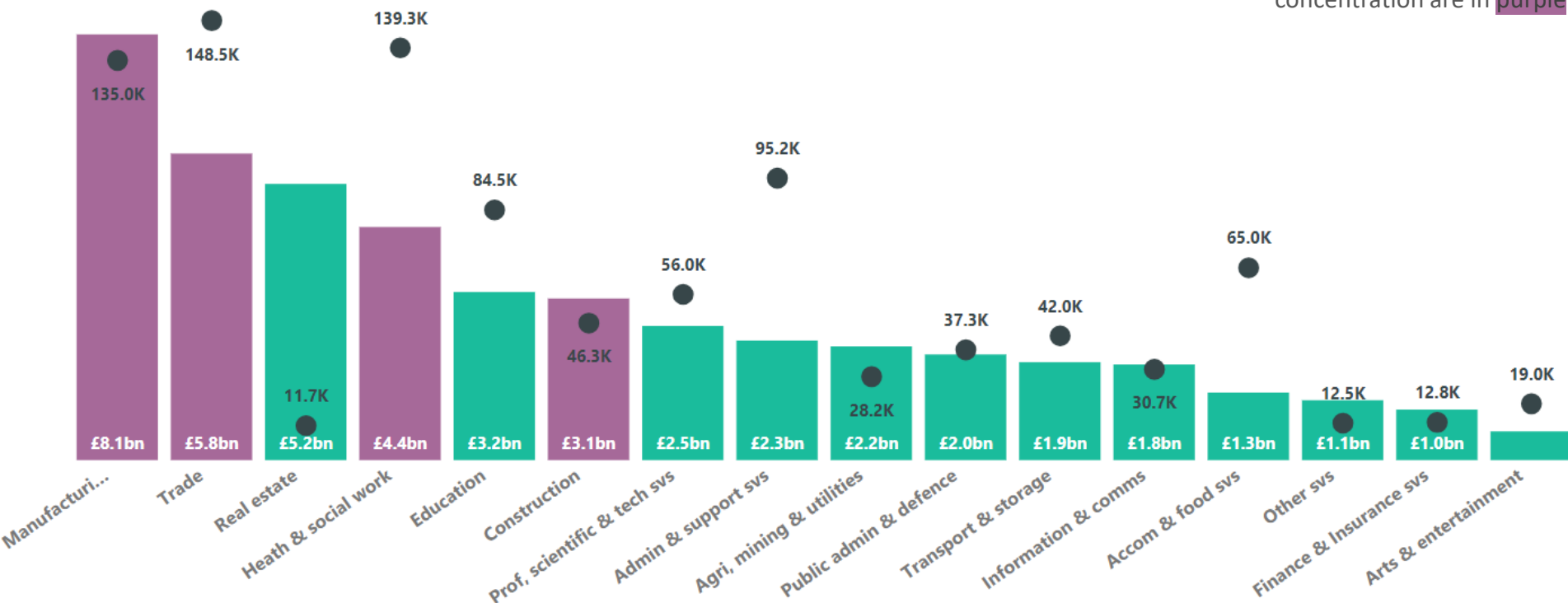- Priority sectors
- Sector overviews

Manufacturing is the largest sector in terms of GVA, while Trade and Health & Social work sectors employ the largest number of people

GVA and Employment in D2N2

● GVA (2017) ● Employment (2017)

Sector groups with above average concentration are in purple

135.0K — £8.1bn — Manufacturi...
148.5K — £5.8bn — Trade
139.3K — 11.7K — £5.2bn — Real estate
84.5K — £4.4bn — Heath & social work
46.3K — £3.2bn — Education
56.0K — £3.1bn — Construction
95.2K — £2.5bn — Prof, scientific & tech svs
28.2K — £2.3bn — Admin & support svs
37.3K — £2.2bn — Agri, mining & utilities
42.0K — £2.0bn — Public admin & defence
30.7K — £1.9bn — Transport & storage
65.0K — £1.8bn — Information & comms
12.5K — £1.3bn — Accom & food svs
12.8K — £1.1bn — Other svs
19.0K — £1.0bn — Finance & Insurance svs
Arts & entertainment

Note: Purple colour identifies sectors with above average concentration (GVA LQ); Source: * ONS, current price estimates (balanced), 2017. ** NOMIS, BRES, 2017
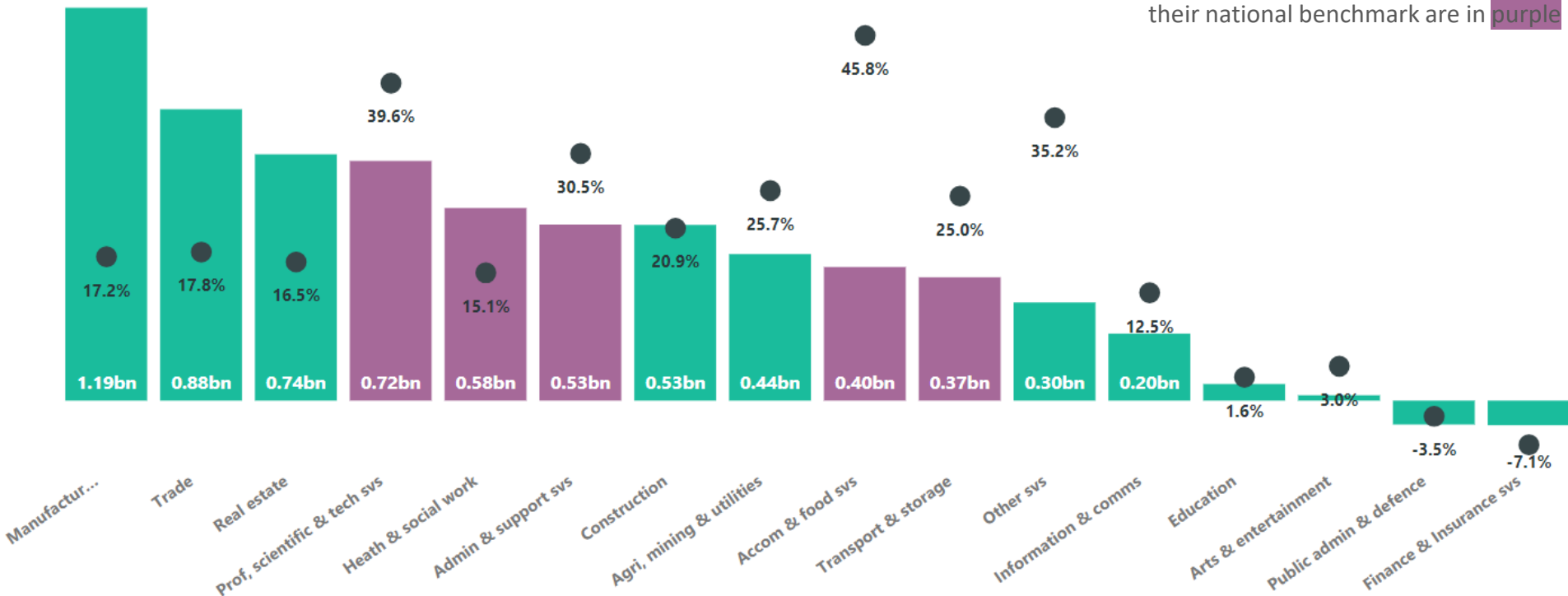
Manufacturing and Trade added most value while Professional, Administrative & Accommodation services, as well as Transportation & Storage grew faster than nationally

Value and % growth, 2012-2017

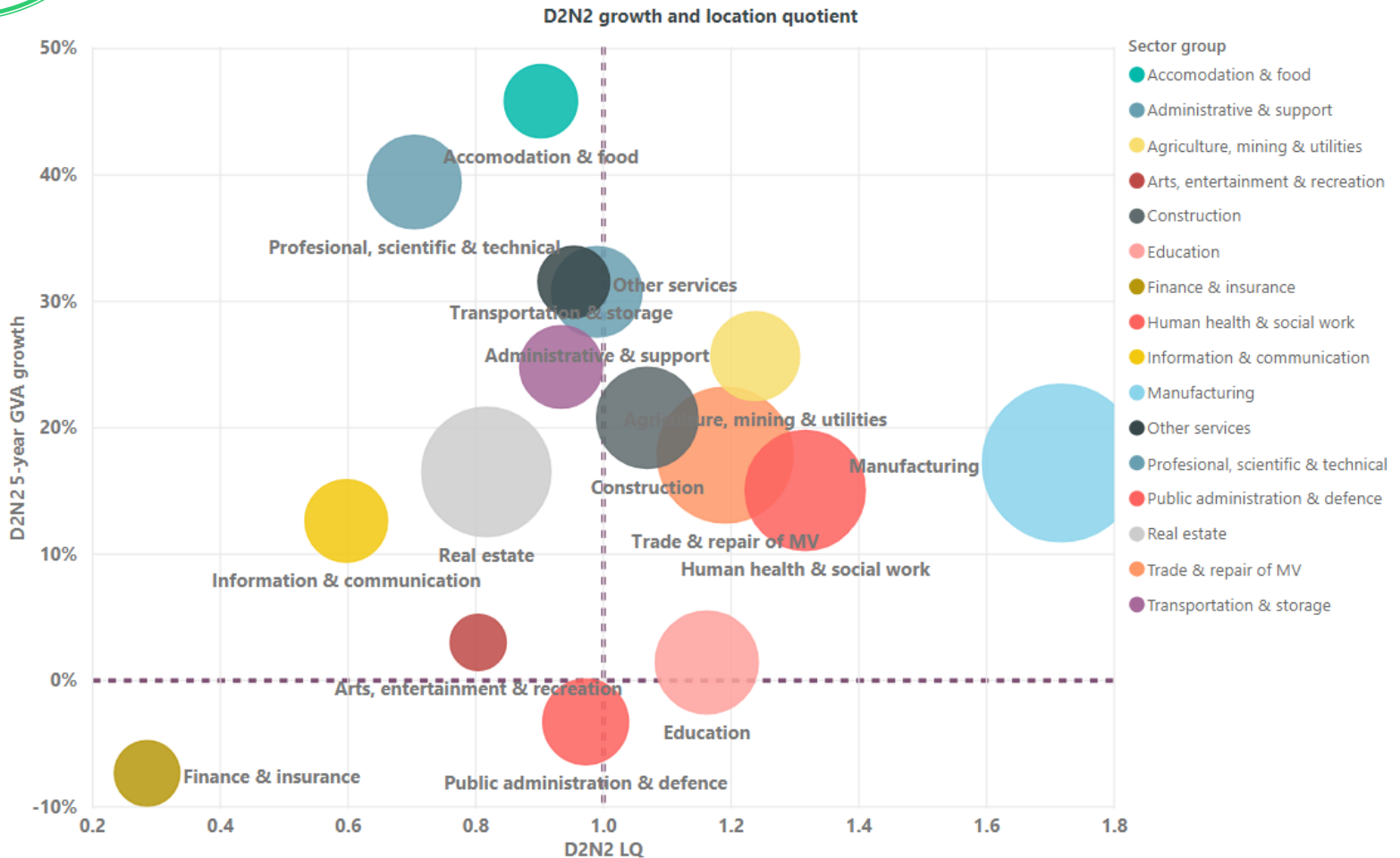● GVA growth (value) ● GVA growth (%)

Sector groups growing faster than their national benchmark are in purple

Sector	Value	% growth
Manufactur…	1.19bn	17.2%
Trade	0.88bn	17.8%
Real estate	0.74bn	16.5%
Prof, scientific & tech svs	0.72bn	39.6%
Heath & social work	0.58bn	15.1%
Admin & support svs	0.53bn	30.5%
Construction	0.53bn	20.9%
Agri, mining & utilities	0.44bn	25.7%
Accom & food svs	0.40bn	45.8%
Transport & storage	0.37bn	25.0%
Other svs	0.30bn	35.2%
Information & comms	0.20bn	12.5%
Education		1.6%
Arts & entertainment		3.0%
Public admin & defence		-3.5%
Finance & Insurance svs		-7.1%

Manufacturing is the **largest and most concentrated sector** compared to the GB average

D2N2 growth and location quotient

Sector group
- Accomodation & food
- Administrative & support
- Agriculture, mining & utilities
- Arts, entertainment & recreation
- Construction
- Education
- Finance & insurance
- Human health & social work
- Information & communication
- Manufacturing
- Other services
- Profesional, scientific & technical
- Public administration & defence
- Real estate
- Trade & repair of MV
- Transportation & storage

Source: ONS, current price estimates (balanced), 2017.

Most of our strengths are in Manufacturing sub-sectors, Information Services, Transport & Logistics, and Wholesale Trade

Left chart:

| Production | Services (market) | Services (public sector-driven) |

Sectors with positive national growth (%) and high D2N2 specialisation (LQ)

Sector group: ● Construction ● Electricity, gas, steam & AC supply ● Manufacturing

(Bubble chart, National 5-year growth vs D2N2 LQ)

Labels: Motor vehicles; Wearing apparel and leather products; Electricity, gas, steam and air conditioning supply; Textiles; Specialised construction activities; Wood and paper products; Other non-metallic mineral products; Repair and installation of machinery and equipment; Fabricated metal products; Civil engineering; Other manufacturing; Electrical equipment; Other transport equipment; Food products; Furniture; Beverages and tobacco products; Basic metals; Machinery and equipment; Printing and reproduction of recorded media; Rubber and plastic products

Right chart:

| Production | Services (market) | Services (public sector-driven) |

Sectors with positive national growth (%) and high D2N2 specialisation (LQ)

Sector group: ● Administrati... ● Education ● Human he... ● Informatio... ● Other servi... ● Profesional,... ● Trade & re...

(Bubble chart, National 5-year growth vs D2N2 LQ)

Labels: Other personal service activities; Veterinary activities; Employment activities; Rental and leasing activities; Wholesale trade; Postal and courier activities; Retail trade; Land transport; Architectural and engineering activities; Residential care activities; Social work activities; Information services; Human health activities; Education

*Strengths are defined as sub-sectors significantly specialized (LQ>1.2) **and** growing nationally.
High specialisation shows comparative advantages while national growth confirms market opportunities.

Source: * ONS, current price estimates (balanced), 2017.

Most opportunities* are in Professional services, Information services, and Accommodation & Food services

Sectors with positive growth difference (% pt) and growing D2N2 specialisation (LQ)
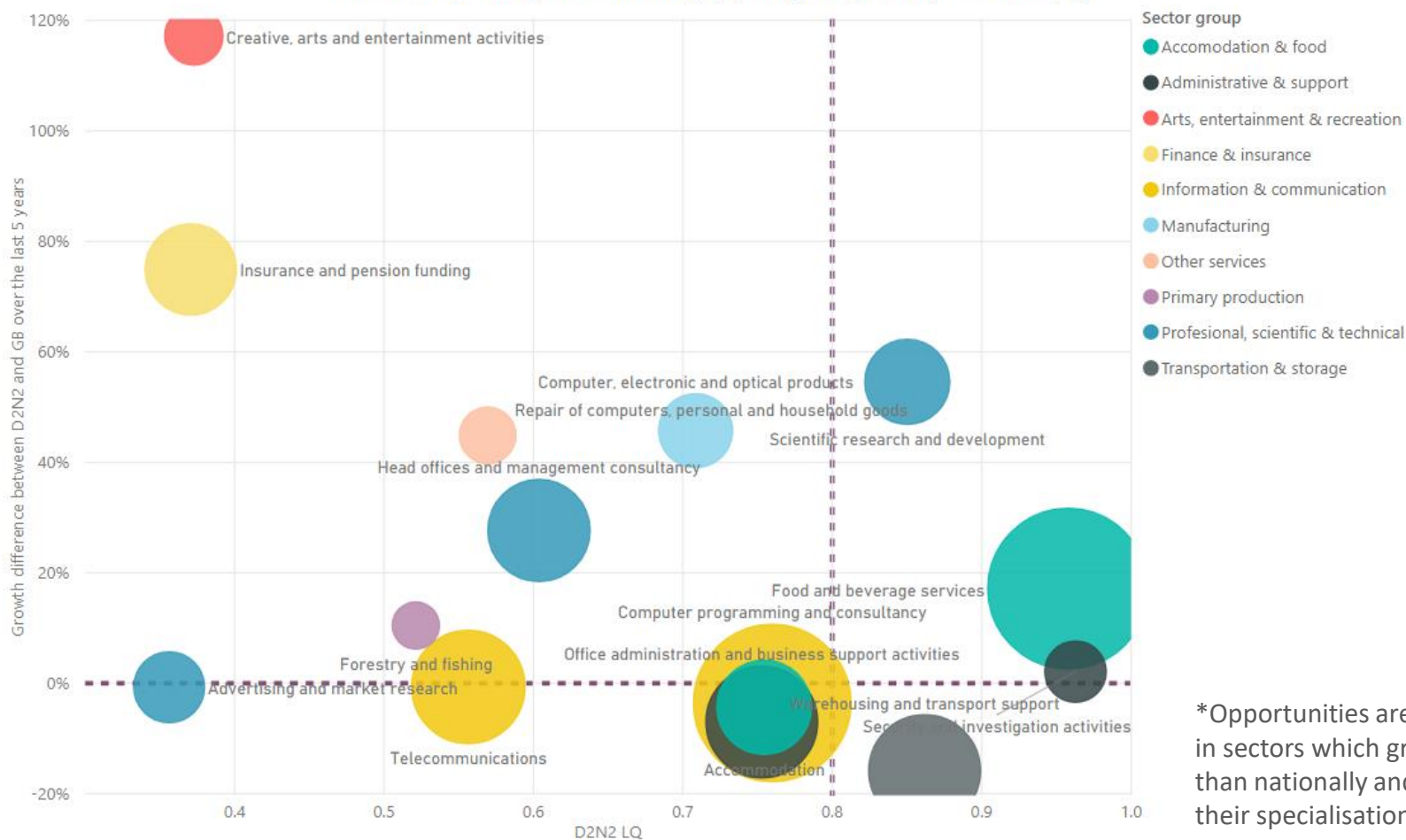
*Opportunities are defined in sectors which grow faster than nationally and increase their specialisation.

Our **priority sectors** combine areas of strengths and opportunities. Boosting productivity in these sectors to the national average could result in **£3bn additional GVA**

Sectors with positive national growth (%) and high D2N2 specialisation (LQ)

29.3%
% of GVA

30.4%
% of FTE Employment

3 bn
potential GVA gain from productivity improvement

Potential GVA gain based on average sector productivity
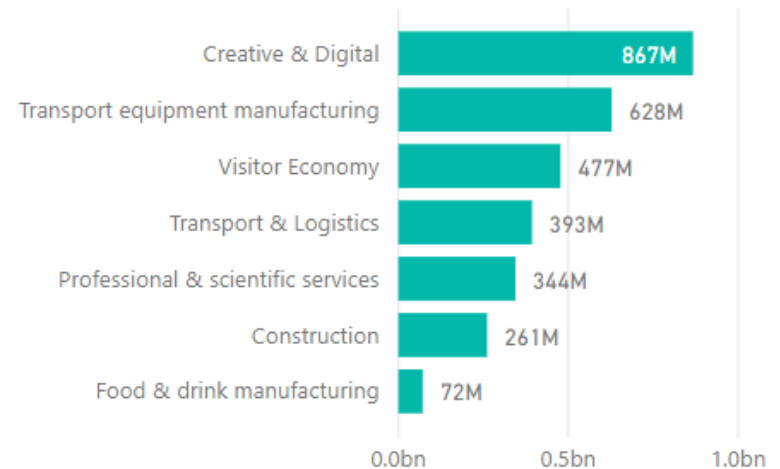
Sector	GVA gain
Creative & Digital	867M
Transport equipment manufacturing	628M
Visitor Economy	477M
Transport & Logistics	393M
Professional & scientific services	344M
Construction	261M
Food & drink manufacturing	72M

26

Transport Equipment Manufacturing
sector overview

Sector indicators

Employment (FTE)
23,820

Growth (2012-17)
5.0%

Productivity
£70,781

GVA
£1.7bn

LQ
2.4

6.2%
of national GVA

GVA trend

1.40bn 1.61bn 1.76bn 1.86bn 2.01bn 1.90bn 1.69bn

LQ trend

3.6 3.4 3.5 3.3 3.3 2.8 2.4

Productivity trend

61.92K 86.22K 91.7K 89.3K 99.69K 86.96K 71.03K
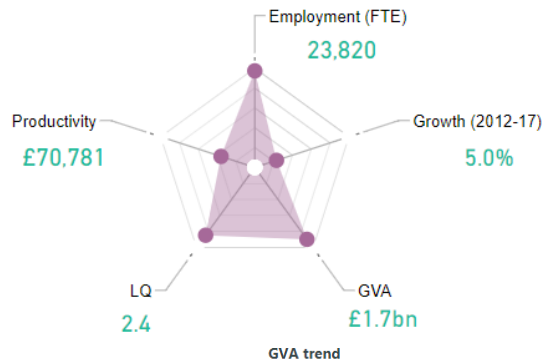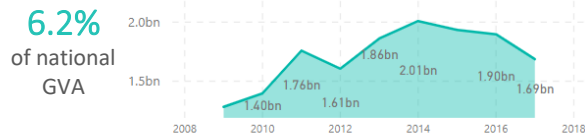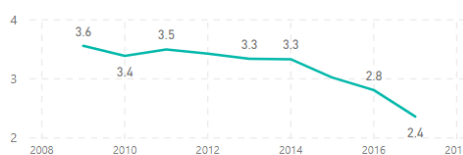
Business composition

205
businesses

Top companies

ROLLS-ROYCE · BOMBARDIER · TOYOTA MANUFACTURING UK · Gardner AEROSPACE · DAHER · ICON Aerospace Technology · SNC·LAVALIN · SMPE STANDARD MOTOR PRODUCTS EUROPE · SILENTBLOC Energy in Motion · Cathelco Part of Evac Group · BM CATALYSTS · LORAM

Assets & research base

- Additive Manufacturing Centre (UoN)
- EPSRC Future Composites Manufacturing Hub (UoN)
- Rolls-Royce University Technology Centre in Manufacturing Technology (UoN)
- Power Electronics Spoke of the Advanced Propulsion Centre (UoN)
- Future Factory Research and Consultancy Centre (NTU)
- Rail Innovation and Development Centre (Network Rail)
- Institute for Aerospace Technology (UoN)
- Rolls-Royce Academy in Derby
- Rail Employment and Skills Academy (Derby College)

Food & Drink Manufacturing sector overview

Sector indicators

Employment (FTE)
17,933

Growth (2012-17)
18.9%

Productivity
£64,408

GVA
£1.2bn

LQ
1.7

4.4% of national GVA

GVA trend
0.77bn 0.93bn 0.97bn 1.27bn 1.14bn 1.20bn 1.16bn

LQ trend
1.3 1.6 1.6 1.9 1.7 1.8 1.7

Productivity trend
47.76K 46.75K 56.03K 69.15K 60.58K 64.41K 61.72K
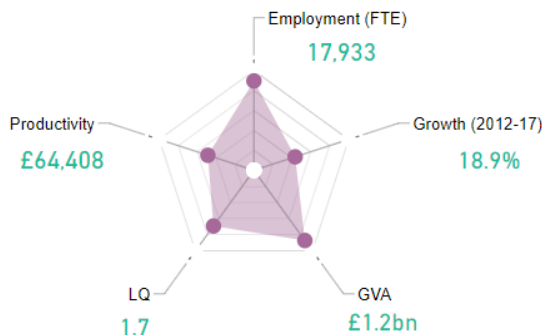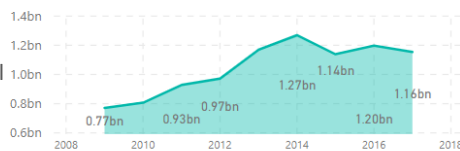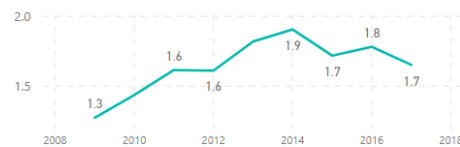
Business composition

275
businesses

Top companies

Thorntons
Nestlé
Addo food group
greencore group
BAKKAVOR
Swizzels
Griffith FOODS
HOVIS BAKERY
BUXTON NATURAL MINERAL WATER
blue monkey brewery

Assets & research base

- Southglade Food Park in Nottingham
- Leading academic research into Sustainable Futures (NTU) and Future Food (UoN)
- EPSRC Centre for Innovative Manufacturing in Food (UoN with Birmingham and Loughborough)
- International Centre for Brewing Science (UoN)
- UK Centre of Expertise for food authenticity testing (NTU)

Life Sciences
sector overview
(Based on business-level data, which give us better information about the composition of Life Sciences clusters than SIC code definitions.)

Business composition

Businesses in top 10 LEP areas

London 710
Greater Cambridge and Grea... 506
D2N2 362
Leeds City Region 305
Oxfordshire 282
Enterprise M3 268
Greater Manchester 237
South East 234
Greater Birmingham and Solihull 214
Coast to Capital 196
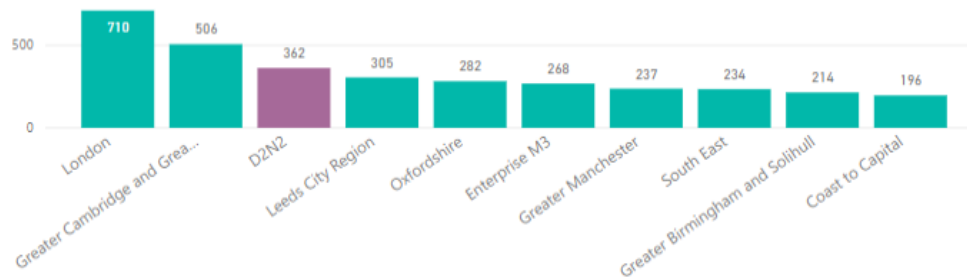
Businesses by Sector

Sector
- Med Tech - Core
- Med Tech - Service & Supply
- Biopharma - Service & Supply
- Biopharma - Core

18 (4.97%)
72 (19.89%)
165 (45.58%)
107 (29.56%)

362 Businesses

5.7% % of UK businesses
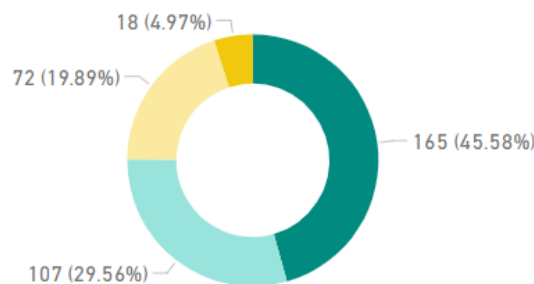
Top companies

Assets & research base

- BioCity and MidiCity incubators.
- Centre for Healthcare Technology Assessment,
- NIHR Nottingham Biomedical Research Centre,
- Nottingham Health Science Biobank (NU Hospitals NHS Trust).
- Medical Technologies Innovation Facility (NTU,
- Interdisciplinary Biomedical Research Facility (NTU),
- John Van Geest Cancer Research Centre(NTU).
- Health and Social Care Research Centre (UoD),
- Centre for Biomolecular Sciences (UoN)
- Centre for Healthcare Technologies (UoN)
- Institute of Mental Health (UoN with Nottinghamshire Healthcare NHS Trust)
- NIHR MindTech Healthcare Technology Co-operative (UoN with Nottinghamshire Healthcare NHS Trust)
- East Midlands Academic Health Science Network
- European Association for Cancer Research
- Health and Safety Laboratory

Source: Office for Life Sciences; MINT, D2N2 Science and Innovation Audit

Creative and Digital
sector overview

Sector indicators

Employment (FTE) 27,963
Growth (2012-17) 12.6%
GVA £1.8bn
LQ 0.6
Productivity £65,051

1.6% of national GVA

GVA trend
1.8bn
1.6bn
1.4bn
2008 2010 2012 2014 2016 2018
1.52bn 1.62bn 1.73bn 1.67bn 1.75bn 1.69bn 1.82bn

LQ trend
0.65
0.60
2008 2010 2012 2014 2016 2018
0.6 0.6 0.6 0.7 0.6 0.6 0.6

Productivity trend
80K
60K
2008 2010 2012 2014 2016 2018
61.06K 64.73K 81.51K 65.8K 71.45K 75.51K 65.05K
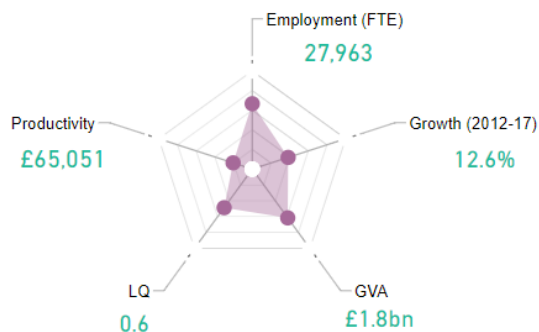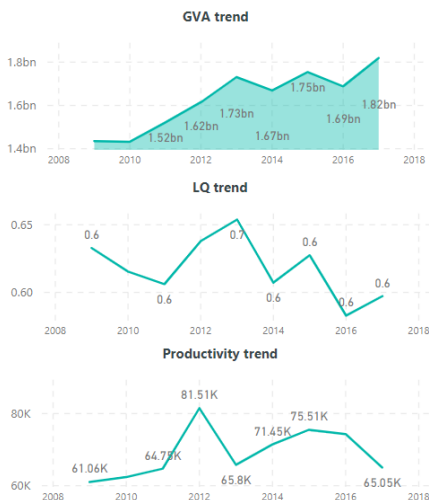
Business composition

4,200
businesses

Top companies

experian™
CCS MEDIA
interoute from the ground to the cloud
JIGSAW 24
NATIONAL AMUSEMENTS
LINNEY
PROACT
COMEX2000 Network & Communication
microlise
ideagen
UNiDAYS

Areas of activity

- Computer games
- Financial data management and analysis
- Life sciences & e-health
- Satellite applications

Assets & research base

- Horizon Digital Technology Research Institute (UoN)
- Innovation Park & Ingenuity Centre (UoN)
- Computational Intelligence and Applications Research Group & Creative and Virtual Technologies Research Lab (NTU)
- The Hive (NTU)
- Banks Mill Studios
- Nottingham's Creative Quarter
- HE collaborations with multinationals – Microstoft, IBM, QinetiQ, ARM

D2N2 Derby Derbyshire Nottingham Nottinghamshire

Note: Growth (2012-2017) and LQ are based on GVA. Each axis shows rank of the sector among all NUTS2 areas. Source: ONS, current price estimates (balanced), 2017; NOMIS, 2017, BRES; ONS UK Business Counts – number of enterprises, 2018; MINT; D2N2 Science and Innovation Audit

Visitor Economy sector overview

Sector indicators

Employment (FTE)
60,813

Growth (2012-17)
27.3%

Productivity
£32,576

GVA
£2.0bn

LQ
0.8

2.2%
of national GVA

GVA trend

1.41bn, 1.56bn, 1.75bn, 1.86bn, 1.94bn, 1.98bn

LQ trend

0.9, 0.8, 0.8, 0.8, 0.8, 0.8, 0.8

Productivity trend

23.49K, 26.79K, 28.22K, 30.66K, 34.26K, 28.6K, 32.58K
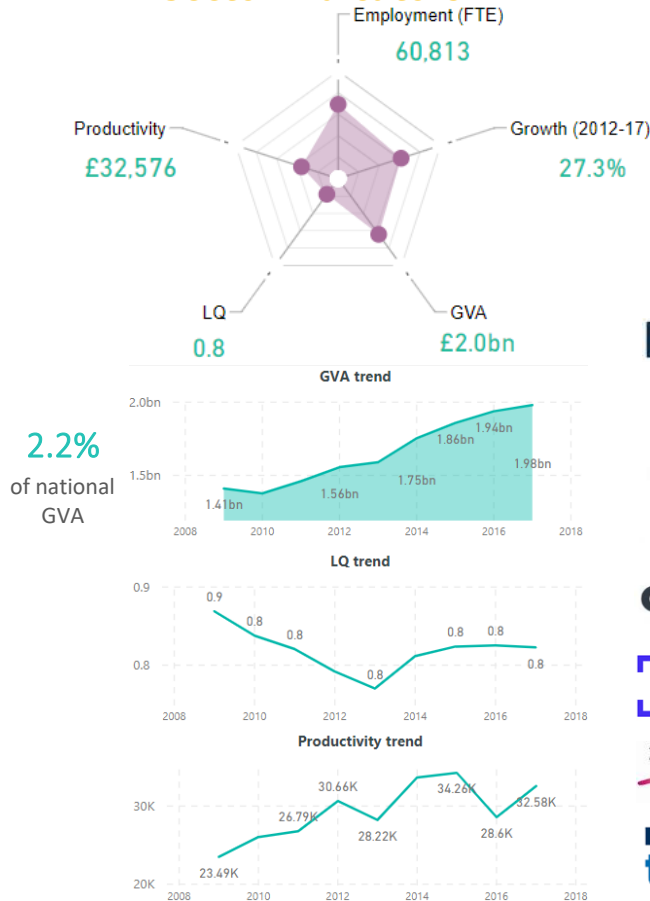
Business composition

6,100
businesses

Top companies

BUZZ Group.
CenterParcs
Delaware North
yha
BISTROT PIERRE 1994
DHP FAMILY
National Ice Centre
CHATSWORTH
PICSOLVE
THE WHITWORTH CENTRE
National Water Sports Centre NOTTINGHAMSHIRE
ZIBRANT
Halsbury travel
rayburn tours
MOTORPOINT arena NOTTINGHAM
DERBY THEATRE
THEATRE ROYAL CONCERT HALL

Areas of activity

- Food & beverage services
- Sports, amusement and recreation
- Creative, arts, and entertainment
- Natural Environment

Natural Assets and Attractions

- Peak District National Park
- Sherwood Forest
- The National Forest
- Attenborough Nature Reserve
- Cresswell Crags
- Buxton Crescent & Thermal Spa
- Buxton Opera House
- Heights of Abraham
- Nottingham Castle
- Newstead Abbey
- Museum of Making
- Derwent Valley Mills
- Newark's National Civil War Centre
- and more

Note: Growth (2012-2017) and LQ are based on GVA. Each axis shows rank of the sector among all NUTS2 areas. Source: ONS, current price estimates (balanced), 2017; NOMIS, 2017, BRES; ONS UK Business Counts – number of enterprises, 2018; MINT; D2N2 Science and Innovation Audit

D2N2 attracts around 3 million visitors and £475 million in visitor spending per year, which is 70% higher than the Midlands Engine averages.
Nottingham, Derbyshire Dales, High Peak, and Newark and Sherwood are the main hotspots.

Visitor spending (£)

Bolsover, Ashfield, Broxtowe £4M [Min — Max] Nottingham £132M

Visitor spending (% of GVA)

Ashfield 0.2% [Min — Max] Derbyshire Dales 5%
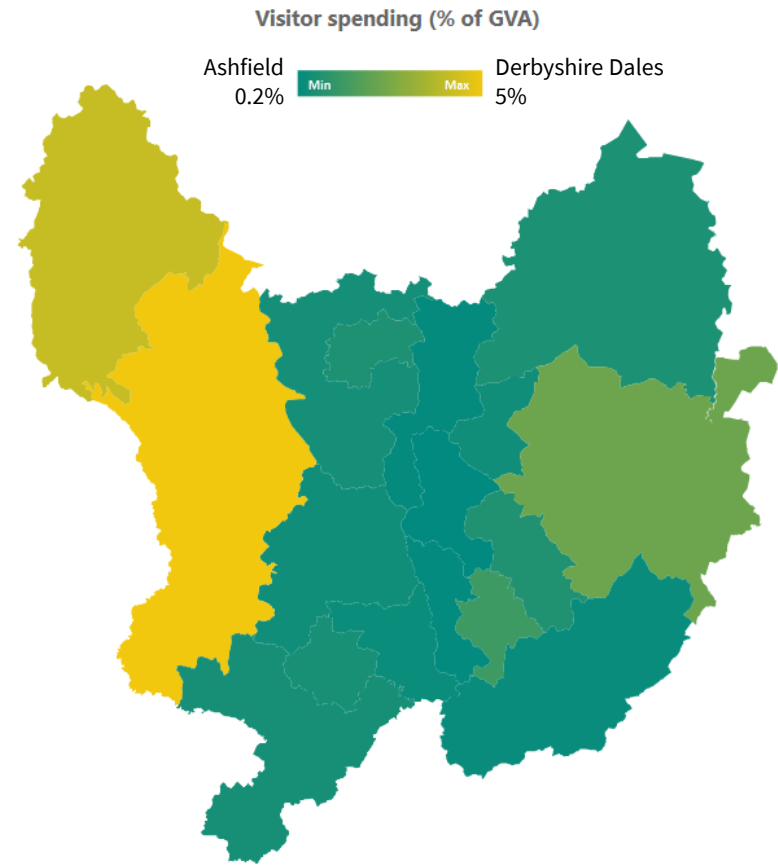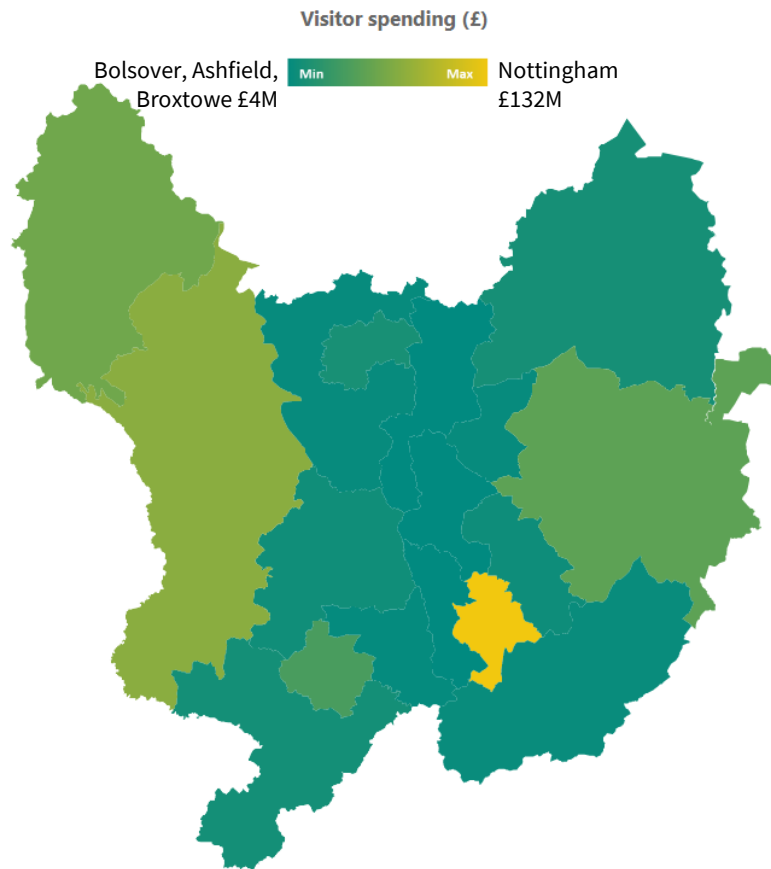
Contents

Ideas

- D2N2 Innovation ecosystem
- Innovation activity assets and outcomes
- R&D expenditure
- Higher education (HE) R&D
- Business R&D
- HE – business interaction in innovation
- Firm-level

D2N2
Derby
Derbyshire
Nottingham
Nottinghamshire

D2N2 **innovation ecosystem** is geared towards productivity improvement

Source D2N2 Science and Innovation Audit

Ideas: Innovation activity assets and outcomes

Innovation Infrastructure

3
Universities

15
Incubators

6
Science Parks

Business – Academic Activity

1.07bn
Business R&D

5
Local KTPs

181
Horizon 2020 projects

Research Base Activity

127m
Higher Education R&D

2,523
Funded Research Projects

19,579
Research publications

D2N2
Derby
Derbyshire
Nottingham
Nottinghamshire

D2N2 is one of the 12 LEPs **exceeding the 2.4% of GDP R&D expenditure target** set by the Government

Local R&D Expenditure as % of Local GVA

Legend: GERD as % of local GVA — National Target
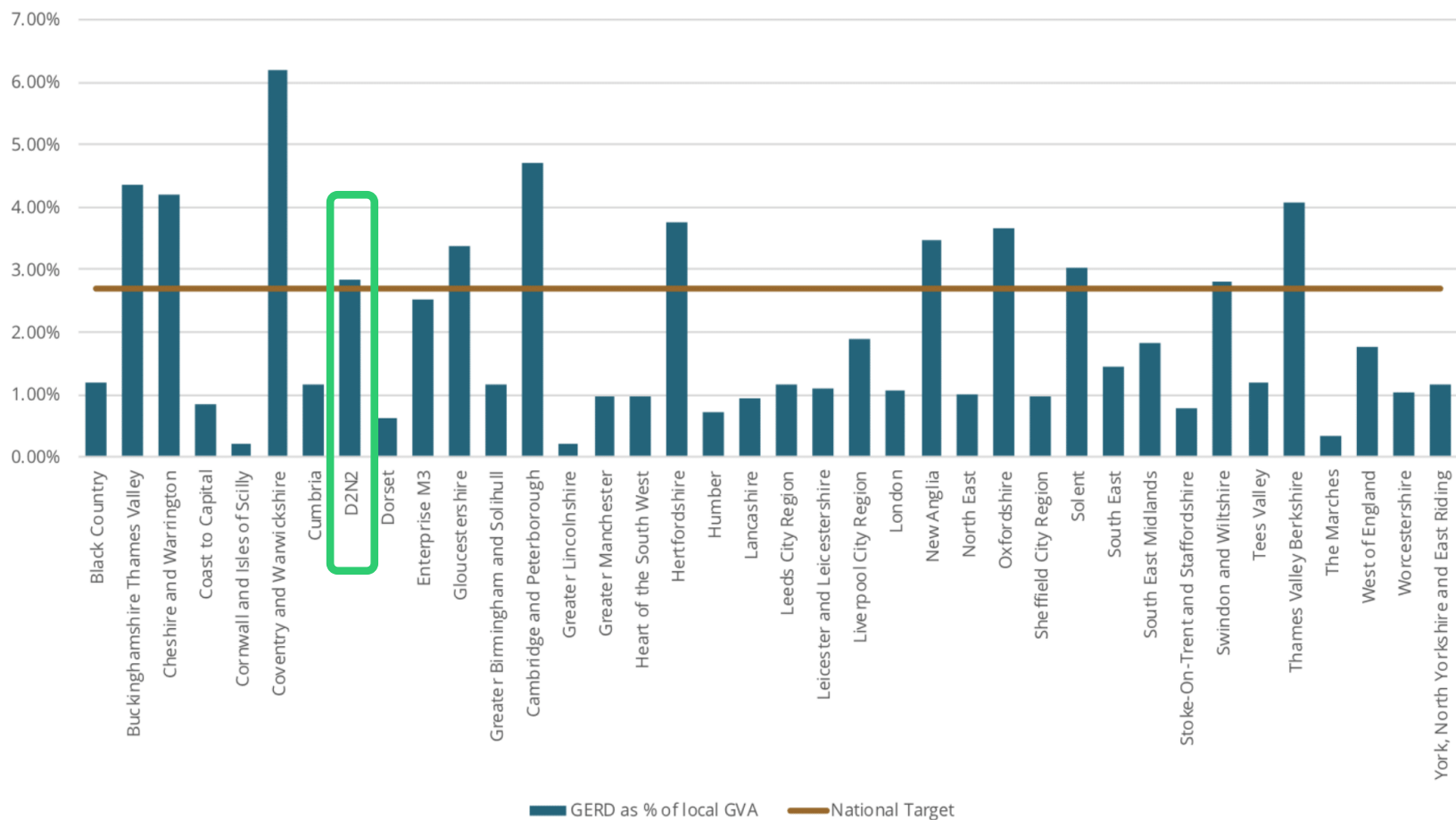
Source: data and reports published by the Smart Specialisation Hub

The proportion of business expenditure on R&D is 20 percentage points higher than average in D2N2

Composition of D2N2 gross domestic expenditure on R&D

Government & Research Councils, 4%

Higher Education, 11%

Business, 86%

■ Business ■ Higher Education ■ Government & Research Councils ■ Private Non-Profit

20% pt.

more business R&D

Composition of UK gross domestic expenditure on R&D

Government & Research Councils, 7%

Private Non-Profit, 2%

Higher Education, 25%

Business, 66%

Source: D2N2 analysis of data published by the Smart Specialisation Hub

While the **number of claims is higher than average in Derbyshire and Nottinghamshire,** **R&D expenditure is below average** across D2N2 according to HMRC data.

Number, Claim Amount and Expenditure linked to R&D tax credit claims (2016-17)

● Number of claims ● Amount claimed (£ M) ● Expenditure (£M)

Avg number of claims: 262

	Derbyshire	Nottinghamshire	Nottingham	Derby
Number of claims	400	280	220	155
Amount claimed (£ M)	15	15	15	20
Expenditure (£M)	100	70	90	170

188

43
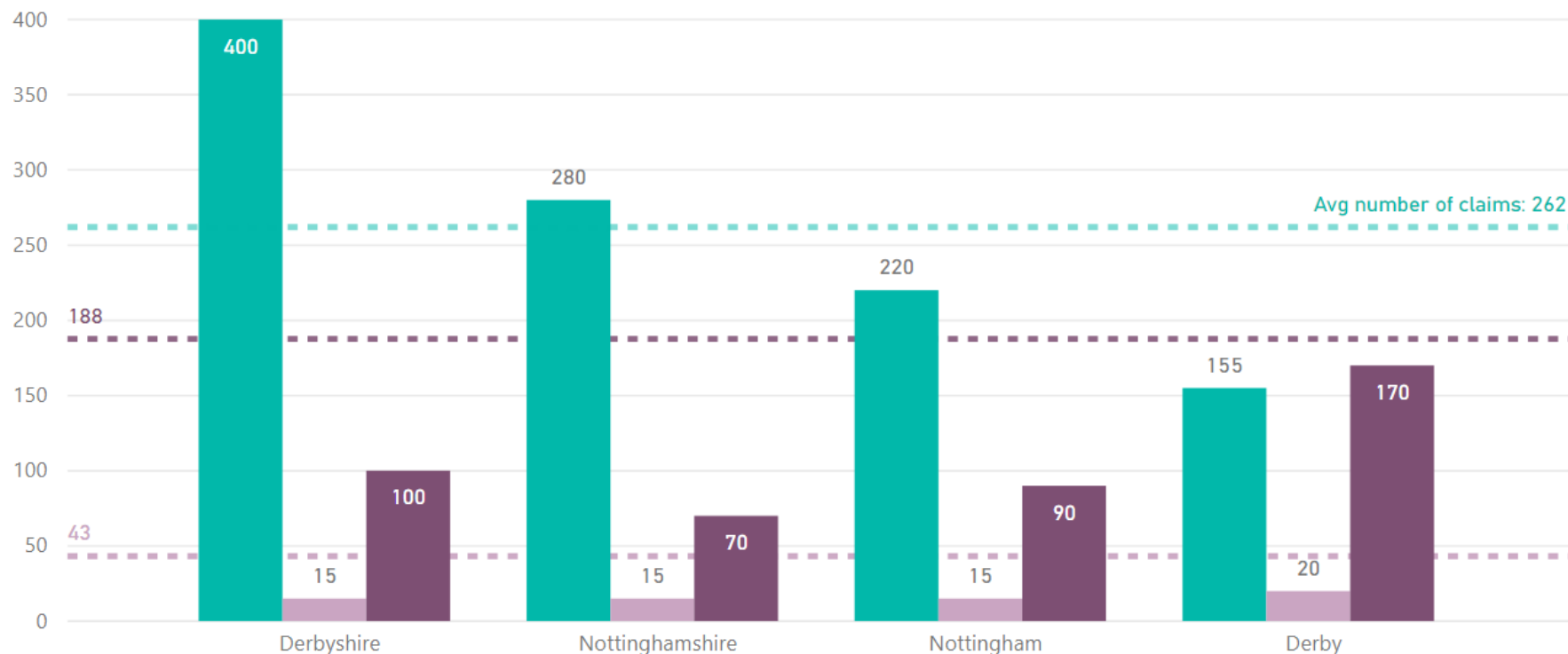
Note: Regional allocation is based on the company's registered address, which might not correspond to where the R&D activity takes place. Numbers are rounded to the nearest 5 and amounts are rounded to the nearest £5m Source: HMRC, R&D Tax Credits Statistics

A **comparatively high percentage of businesses** make **design investments**, introduce **new work organisation methods**, and derive their **sales from innovative products**

Innovation Benchmarks: 2014-16

Highest ■ Lowest □ Derby, Derbyshire, Nottingham and Nottinghamshire
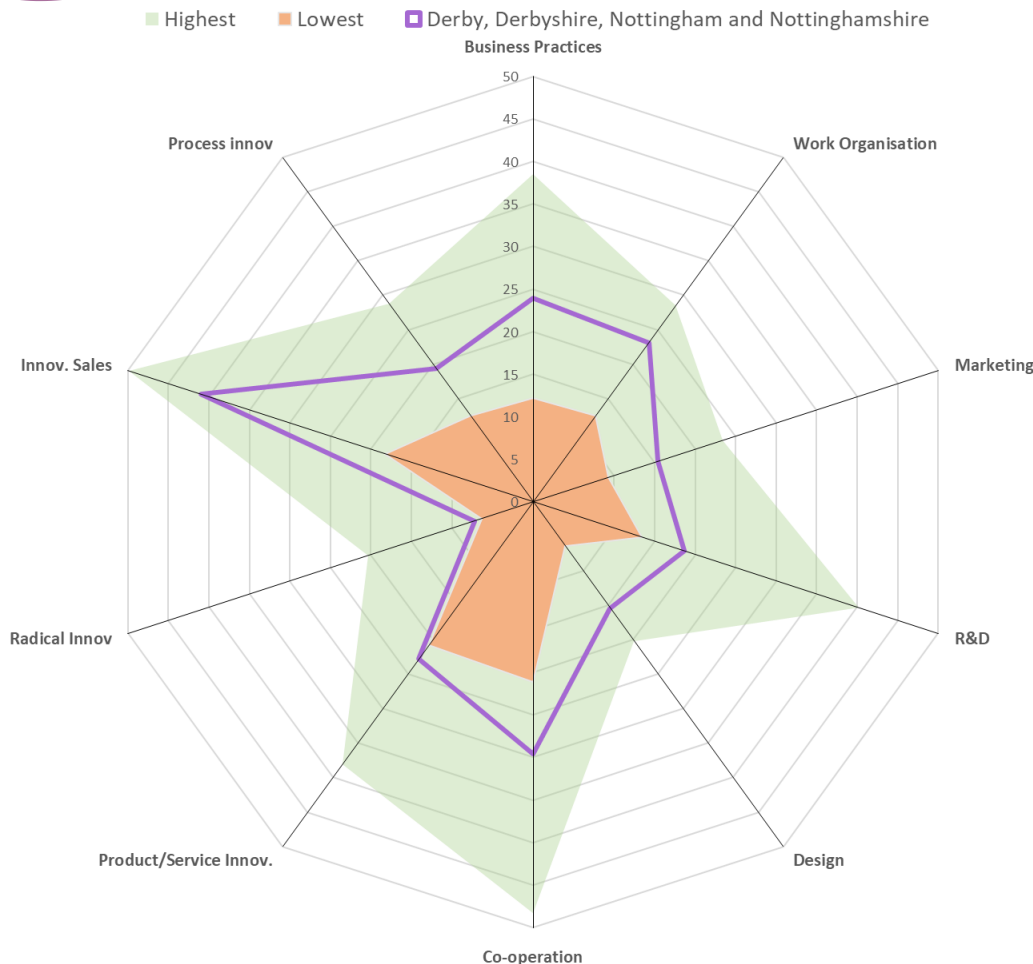
However, the proportion of firms undertaking R&D is relatively small.

The proportion of firms engaged in product or service innovation, as well as radical innovation is also comparatively small.

19%
undertake R&D

23%
product/service innovation

However, a relatively small percentage of businesses engage in product or service innovation

Percentage of firms engaged in product or service innovation (mid-point estimates and 95 per cent confidence intervals)
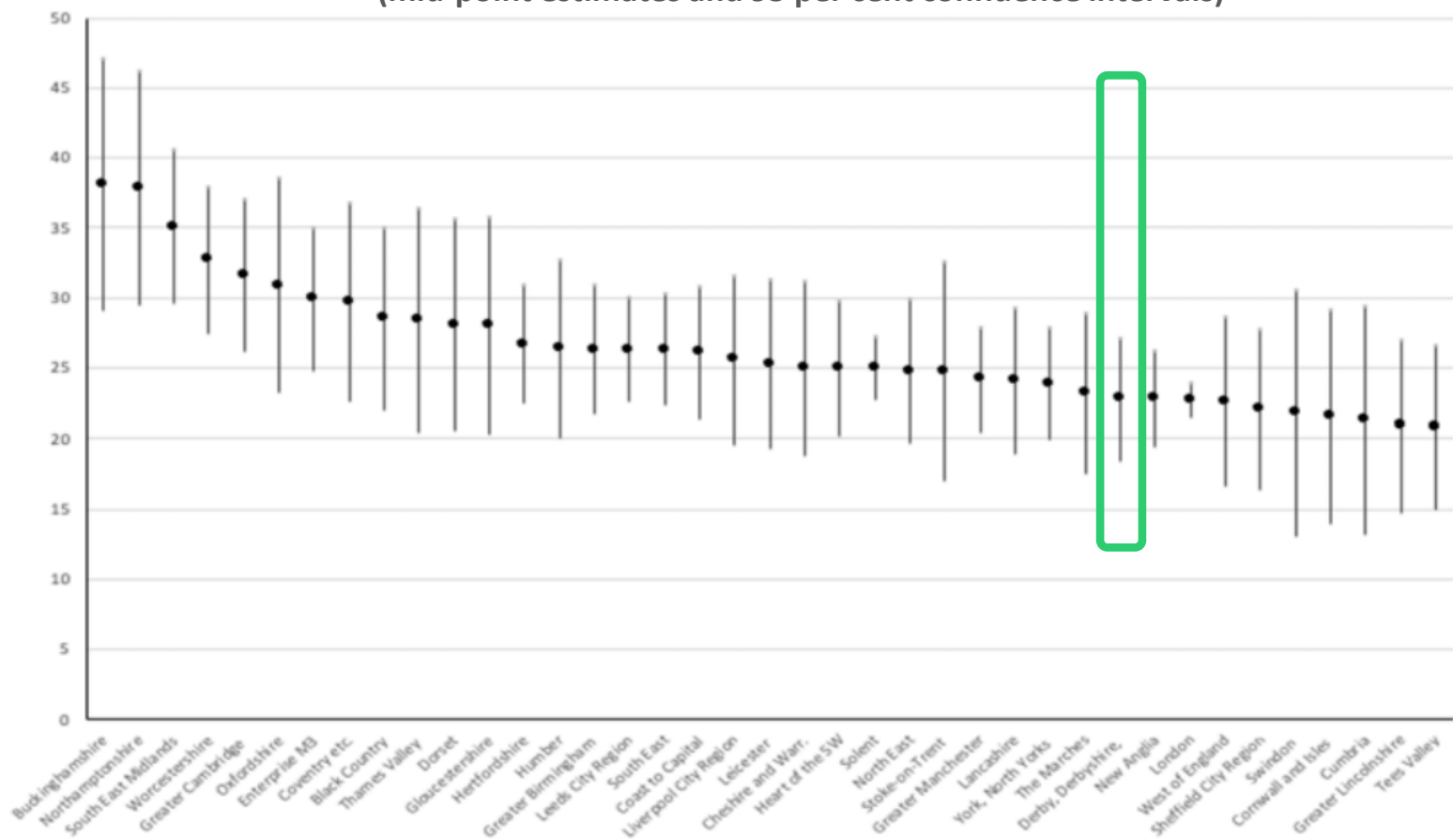
40

Below average Higher Education spending on research R&D but above average involvement in innovative research production

Higher Education Spending on R&D (HERD)[1]

Average

0.64 | 1

Indicator of Staff Submitted for Involvement in Innovative Research Production to the Research Excellence Framework (REF)[2]

Average = 1

Subject	Value
(S1) Medicine & Dentistry	1.39
(S2) Subjects Allied to Medicine	0.94
(S3) Biological Sciences	1.81
(S4/S5) Veterinary Science & Agriculture	5.82
(S6) Physical Sciences	1.29
(S7) Mathematical Sciences	1.34
(S8) Computer Science	1.51
(S9) Engineering & Technology	1.66
(S10) Architecture	2.70
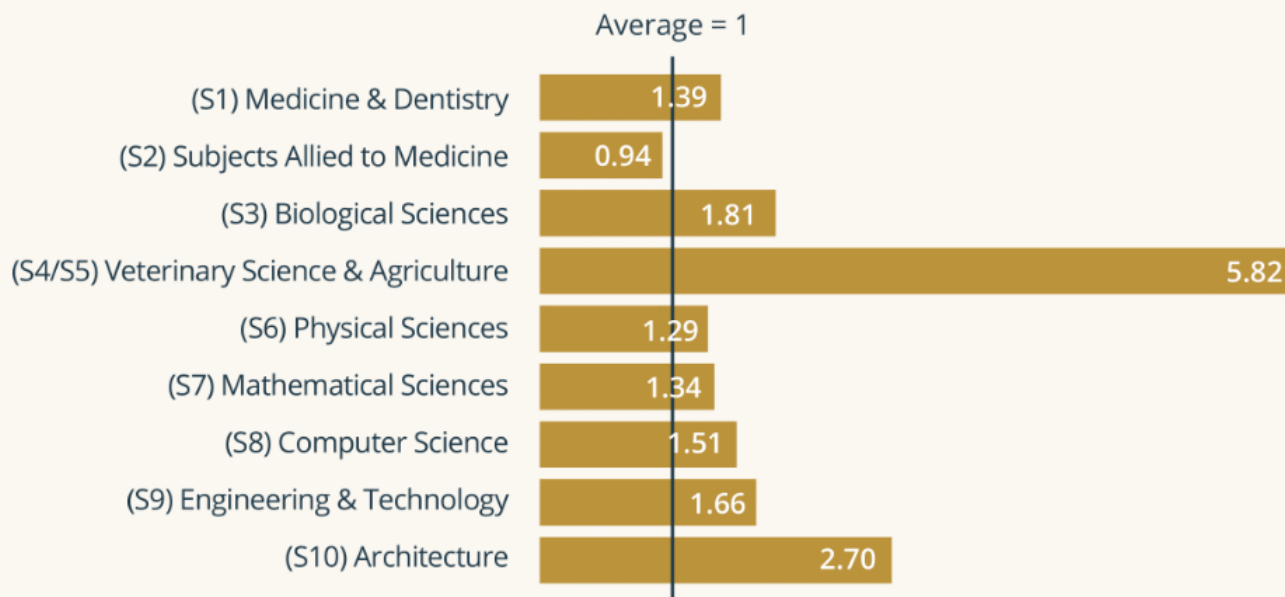
1. Figures are from Eurostat for 2014, at NUTS2 region level. NUTS2 regions are adapted to LEPs by weighted averages based on the number of local authorities in each region. Figures are relative to employment, figures for employment (FTE) from ONS Business Register and Employment Survey 2015.

2. Figures are from the Higher Education Statistics Agency for 2014. Values aggregated from HE Institution level to LEP level. University disciplines are the result of combining JACS3 STEM discipline classification and HESA discipline classification for this indicator - the S before numbers represents a STEM subject.

Above average innovation in business and industry

Business Enterprise Spending on R&D (BERD)[4]

Average = 1 — 1.50

Grants Offered by Innovate UK[5]

Average = 1

Sector	Value
Advanced Materials	3.37
Aerospace	0.70
Agri Tech	0.20
Biosciences	0.39
Built Environment	0.00
Development	0.61
Digital Services	0.86
Electronics, Photonics & Electrical Systems	1.11
Emerging Technologies	0.82
Energy	14.54
Food Supply	2.15
Healthcare	0.87
High Value Manufacturing	1.83
Information & Communication Technology	0.00
Infrastructure	0.89
Life Science	1.13
Materials & Manufacturing	2.91
Space	2.42
Sustainability	2.31
Transport	1.15
Urban Living	0.29

4. Figures are from ONS BERD for 2015, special tabulation performed using Secure Research Service. Figures are relative to figures for employment (FTE) from ONS Business Register and Employment Survey 2015.

5. Figures are for March 2014 to March 2018 and were extracted on 22nd March 2018 from Innovate UK's website.

Above average higher education and business interaction in innovation

Interactions Between HE Institutions & Business[9]

Average = 1

Consultancy Research (SMEs)	1.21
Contract Research (SMEs)	2.85
Consultancy Research (large businesses)	2.24

Number of Active Graduate Start-ups[11]

Average 1 — 1.79

Employment by Science & Technology Category[6]

Average = 1

Digital Technologies	Life Sciences & Healthcare	Publishing & Broadcasting	Other Sci & Tech Manufacture	Other Sci & Tech Services
0.96	1.22	0.48	1.84	1.12

6. Figures are extracted from the Inter Departmental Business Register by ONS for 2016.

9. Figures are for income for consultancy and contract R&D, HEBCI, 2014/15 and 2015/16. Figures are an average for the two years.

11. Figures are from HEBCI 2015/2016 for the number of graduate start ups which have survived three years.

Source: Smart Specialisation Hub

Ideas:
Innovate UK funding

316 projects started funding from Innovate UK from 2017 to mid-2019.
University of Nottingham and Rolls-Royce have secured most Innovate UK funding

£71m
total grants

£9.8m
from the Industrial Strategy Challenge Fund

Total Grant amount by LEP (projects started 2017-2019)

Industrial Strategy Challenge Fund (ISCF) ● No ● Yes

LEP	Grant
London	£601M / £123M
Coventry and Warwickshire	£315M / £191M
Oxfordshire	£165M / £122M
West of England	£195M
Sheffield City Region	£160M
South East Midlands	£134M
North Eastern	£121M
Greater Birmingham and Solihull	£115M
Tees Valley	£108M
Greater Cambridge and Greater Peterborough	£79M
Gloucestershire	£86M
Solent	£69M
D2N2	£61M

£0.0bn   £0.2bn   £0.4bn   £0.6bn

D2N2 grants

Industrial Strategy Challenge… ● No ● Yes

Rotherham, Sheffield, Gainsborough, Worksop, Retford, Chesterfield, Mansfield, Sutton-in-Ashfield, Newark, Ilkeston, Nottingham, Long Eaton, West Bridgford, Grantham, Burton upon Trent, Loughborough, Melton Mowbray

Rolls-Royce →
→ UoN

Bing
© 2019 Microsoft Corporation Terms

Source: Innovate UK, June 2019. Location shows the lead participant' registered address and may not correspond to the location of R&D activities.

People

- Demographics (population estimates, projections by age and county; ethnicity, migration)
- Labour market (inactivity, employment, unemployment)
- Skills pipeline
- Skills profile
- Occupational profile
- Employers and vacancies
- Earnings and Living wage
- Automation and retraining needs
- Social mobility

Derby
Derbyshire
Nottingham
Nottinghamshire

Total population for D2N2 is over **2.2 million** residents split almost evenly between Derby-Derbyshire and Nottingham-Nottinghamshire.

Population (mid-2017)

- Derby — 12%
- Derbyshire — 36%
- Nottingham — 15%
- Nottinghamshire — 37%
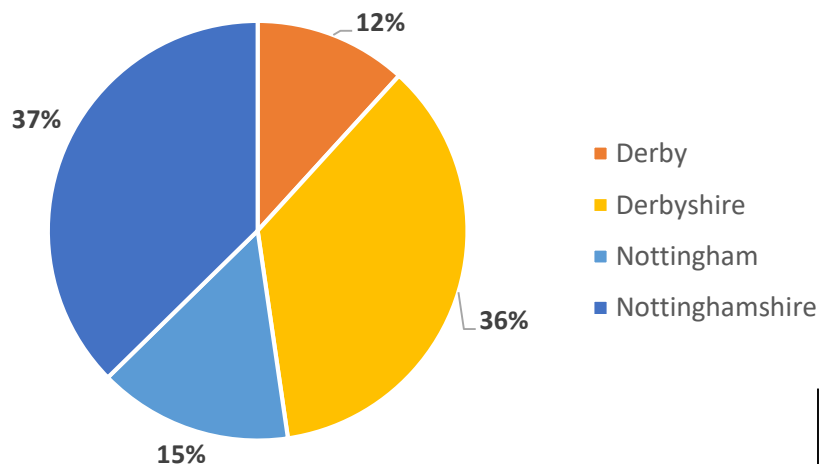
There is a marked difference in the rates of growth – both Nottingham and Nottinghamshire experienced higher population growth than the UK average level while Derby and Derbyshire percentage change was below the UK average. This difference of N2 growing faster than D2 is expected to continue in the near future:

Area	Population (mid-2017)	Population growth (%) 2012 -2017	Population projections % change (2018 -2030)
Derby	260,300	3.36	4.91
Derbyshire	795,000	2.36	4.16
Nottingham	331,300	6.82	6.35
Nottinghamshire	826,100	3.91	6.40
UK	66,040,229	3.70	5.87

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Derby and Nottingham have larger proportions of under 50 years old residents than Derbyshire and Nottinghamshire, have higher proportions of older residents.

Age Profile D2N2 (2017)

Legend: ■ 0 - 19 ■ 20 - 34 ■ 35 - 49 ■ 50 - 64 ■ 65 and over

Derby: 26% (0-19), 22% (20-34), 19% (35-49), 17% (50-64), 16% (65 and over)

Derbyshire: 21% (0-19), 17% (20-34), 19% (35-49), 21% (50-64), 21% (65 and over)

Nottingham: 26% (0-19), 32% (20-34), 17% (35-49), 14% (50-64), 11% (65 and over)

Nottinghamshire: 22% (0-19), 17% (20-34), 19% (35-49), 21% (50-64), 20% (65 and over)
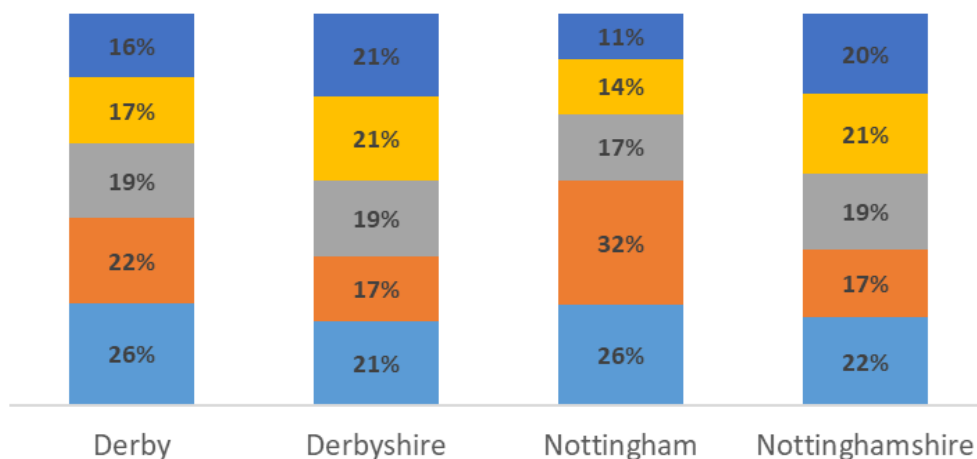
Nottingham has the highest proportion of 20-34-year olds. Arguably, Nottingham can attract a higher number of young residents, possibly in connection with the two universities present in this city. The second observation is that Derbyshire has the lowest proportions of residents under 19 and under 34 years. Derbyshire also has the highest proportion of residents aged 50 – 64 years and over 65 years.

Looking at the forward projections, across the D2N2, the largest population increase will take place in the 65+ age group, albeit below the expected change for England as a whole. In contrast with the rest of D2N2 and England, Nottingham stands out as the only place expected to experience growth in all age groups, including the 20-34 year olds and the 50-64 year olds. Population changes expected in Derby will mimic the changes for England but with smaller amplitude.

	0-19	20-34	35-49	50-64	65 and over
Derby	2.2%	-1.2%	3.5%	0.4%	23.7%
Derbyshire	0.7%	-6.4%	1.2%	-3.6%	25.9%
Nottingham	8.4%	0.6%	5.1%	1.7%	24.9%
Nottinghamshire	5.4%	-3.4%	5.3%	-2.9%	25.9%
England	4.6%	-4.3%	4.5%	2.2%	26.5%

UNIVERSITY of DERBY

Derbyshire and Nottinghamshire are 'older' compared with England and the UK, while **Derby and Nottingham have a younger profile.**
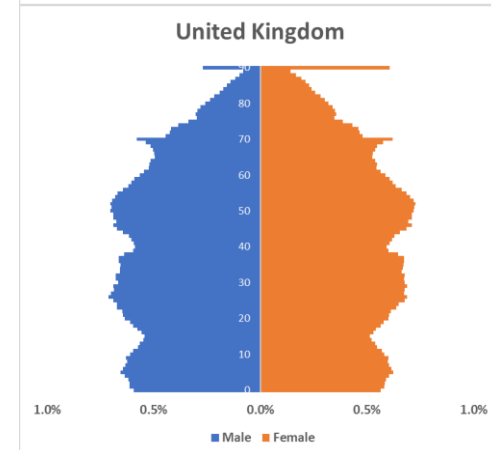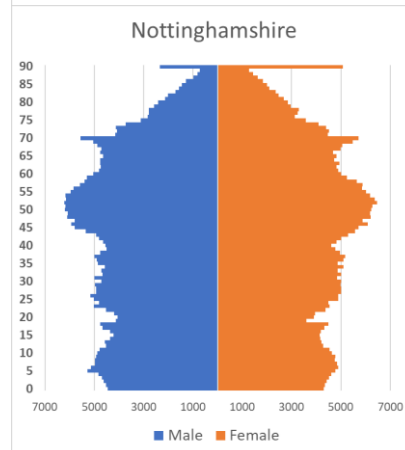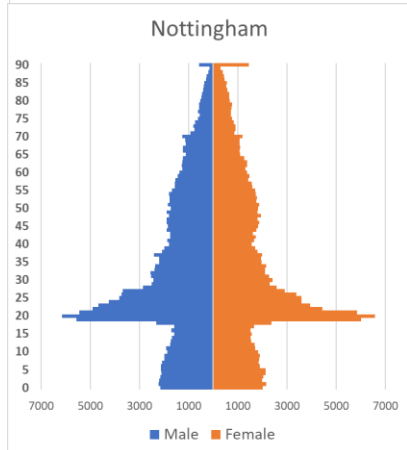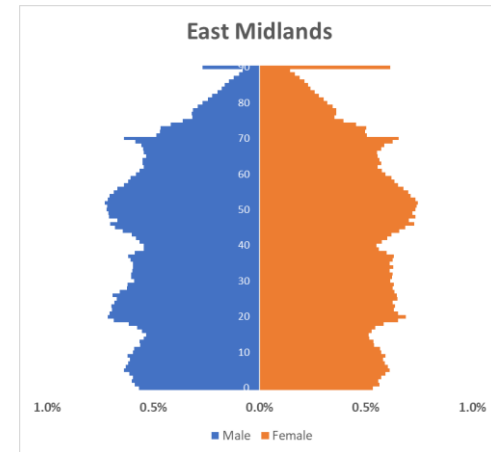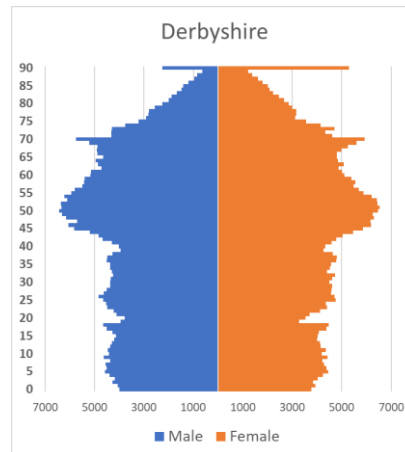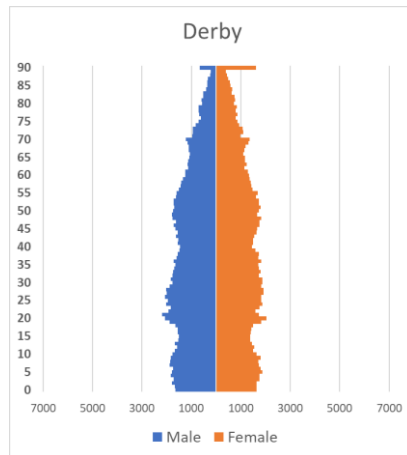
Looking at the next decade, there will likely be a **decline in young population** in the 20-24 and 30-34 years old groups

Projected Population Growth, Young Age Groups 2018 - 2030
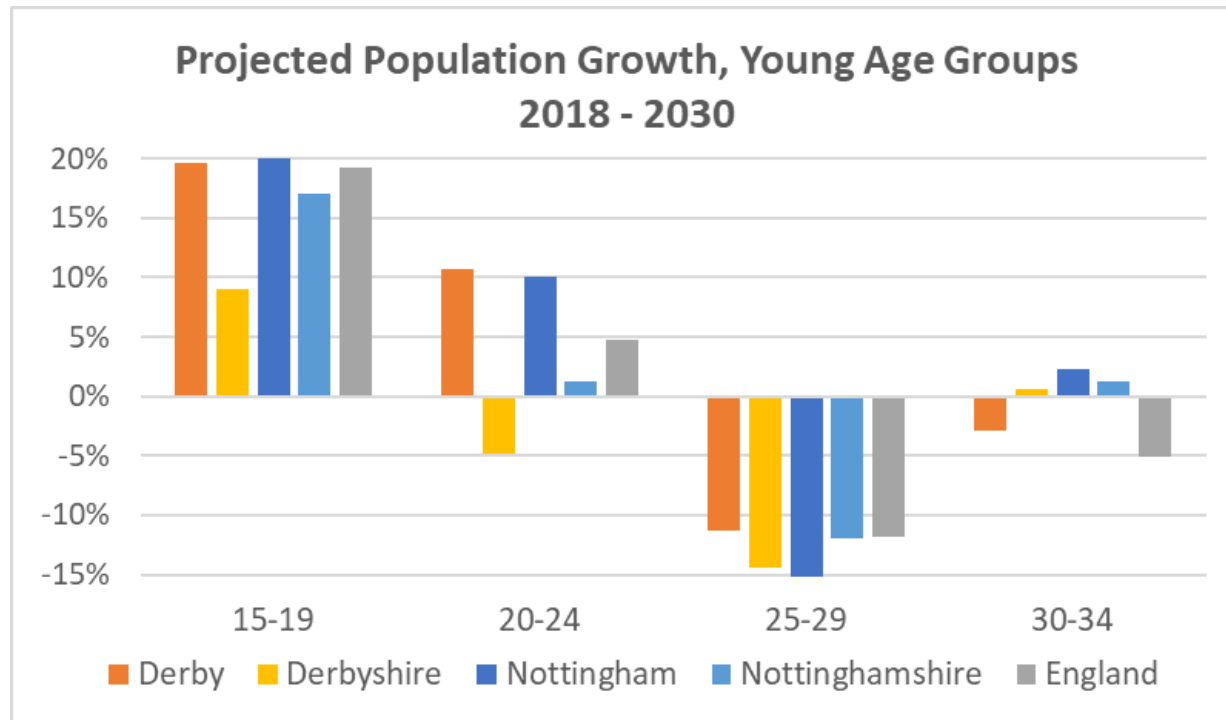
Both **Derby and Nottingham have more diverse populations** than nationally.

D2N2 Population by Ethnicity (2018)

Derby: 18 (% ethnic minority 16+), white 82
Derbyshire: 3
Nottingham: 27
Nottinghamshire: 4
UK: 12

■ % white 16+   ■ % ethnic minority 16+
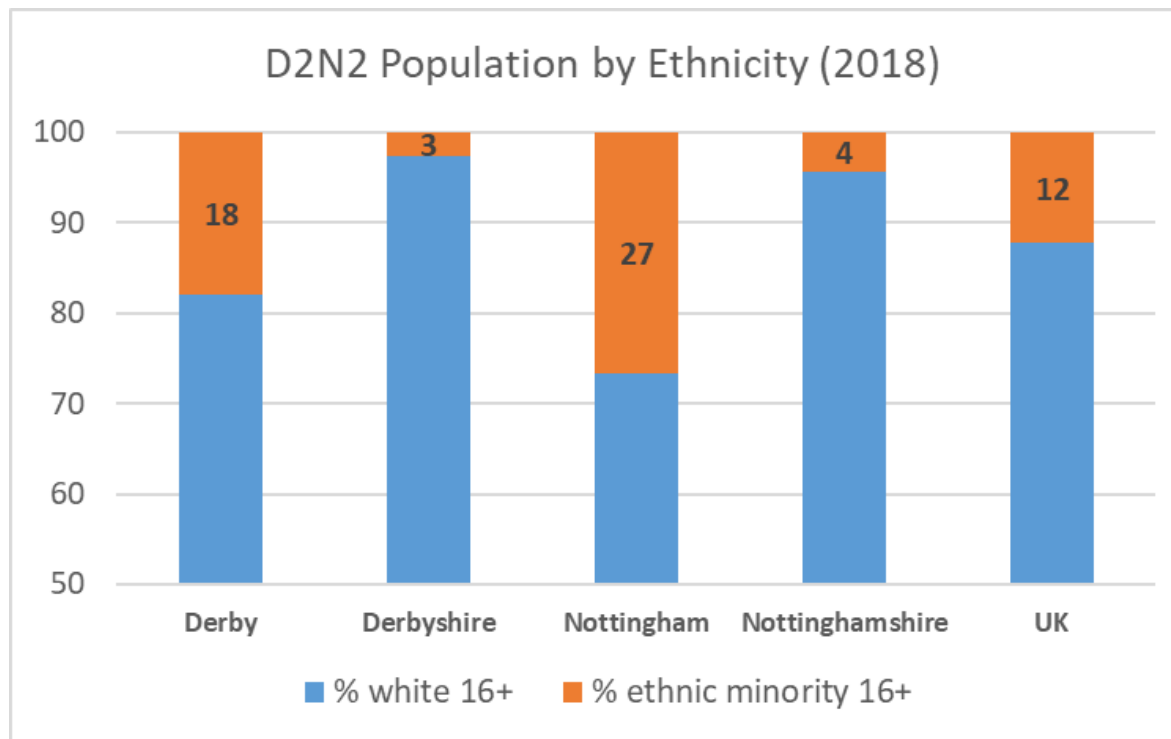
Nottingham stands out with ethnic minorities constituting 26.6% of its total population. Both Derbyshire and Nottinghamshire are predominantly white, with the proportion of ethnic minority populations far lower than the national average.

Source: University of Derby analysis of Population estimates, NOMIS (2019)

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D2N2 enjoys a **net inflow** of people.

Internal Migration (2017)

	Inflows	Outflows	Net flows
Derby	12,702	13,893	-1,191
Nottingham	30,611	31,786	-1,175
Derbyshire	42,138	37,081	5,057
Nottinghamshire	47,068	42,689	4,379
Total	132,519	125,449	7,070

Table to the left shows internal migration figures for D2N2. These are broken down into inflows and outflows to and from other places within the UK. Derby and Nottingham experienced a negative net flow in migration

Cities' net outflows are at their highest in the 20-34 bracket. These flows could be associated with university graduates leaving after their studies. Both cities also experienced inflows in the 0-19 years old bracket, though considerably higher in Nottingham. On the contrary, Derbyshire and Nottinghamshire experienced inflows in all brackets except 0-19 years old.

Net Migration by age (2017)

	Derby	Derbyshire	Nottingham	Nottinghamshire
0 - 19	450	-630	7040	-180
20 - 34	-1030	2970	-6880	2250
35 - 49	-410	1580	-950	1480
50 - 64	-260	790	-210	340
65+	50	360	-180	490

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63% of overseas nationals are from the EU

Migration from outside the UK into D2N2

Legend: Derby, Derbyshire, Nottingham, Nottinghamshire

EU2: Bulgaria and Romania – 39% of EU
EU8: Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia – 33% of EU
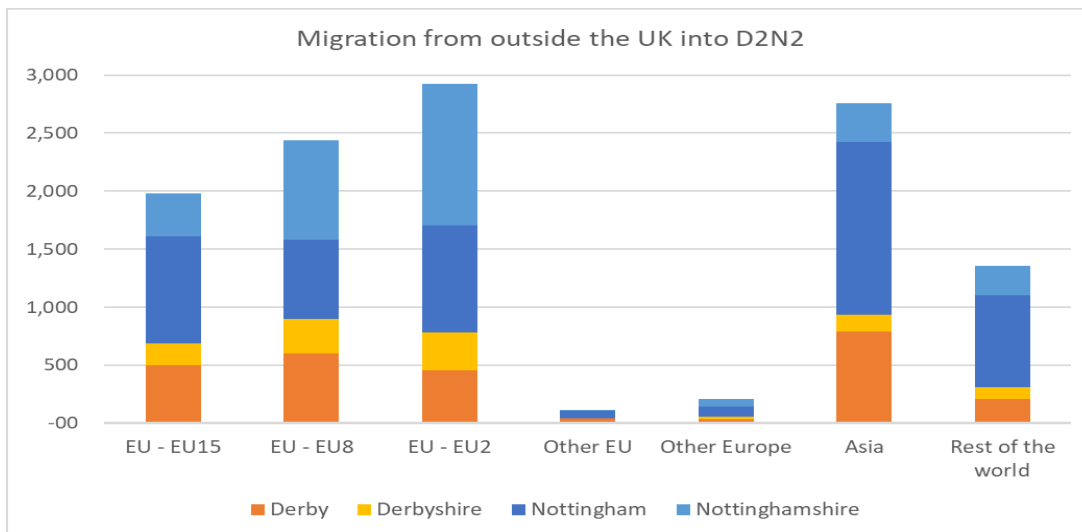
Chart to the right illustrates the country of origin of adult overseas nationals entering the UK who have been allocated National Insurance numbers (NINo) between 2017 and 2018. It shows the distribution across EU, Asia and the rest of the world for D2N2. A total number of 11,755 adult nationals entering the UK were issued NI numbers in D2N2. The second highest number of overseas nationals in D2N2 come from Asia. Most of the overseas nationals are residents in Nottingham and Nottinghamshire (68% of the total allocated NINos).

Derby and Derbyshire perform better than Nottingham and Nottinghamshire in terms of employment and economic activity. Their rates are also higher than the national averages.

	Economic activity rate		Employment Rate		Unemployment rate	
	2017	*2018*	*2017*	*2018*	*2017*	*2018*
Derby	74.5	77.4	71.3	74.2	4.2	4.2
Derbyshire	80.2	81.6	77.9	78.8	2.9	3.5
Nottingham	62.5	67.4	57.4	63.3	8.1	6.0
Nottinghamshire	79.2	77.0	76.0	73.0	4.1	5.2
UK	78.2	78.3	74.7	75	4.5	4.3

Economic activity indicates the size of the labour force (employed and unemployed) as a proportion of the working age population (16 to 64 years). The employment rate measures the number of employed workers as a percentage in working age population. The unemployment rates measure the number of the unemployed as a percentage of the labour force (employed and unemployed). Economically inactive people, including students, the long-term sick and carers are outside of the labour force as they are neither employed nor unemployed and considered economically inactive.

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While Nottinghamshire has the highest numbers of economically inactive, Nottingham has the highest percentage of economically inactive population across the D2N2 and higher than the Great Britain proportion.

Economic Inactivity Rate within D2N2 and GB (2017)
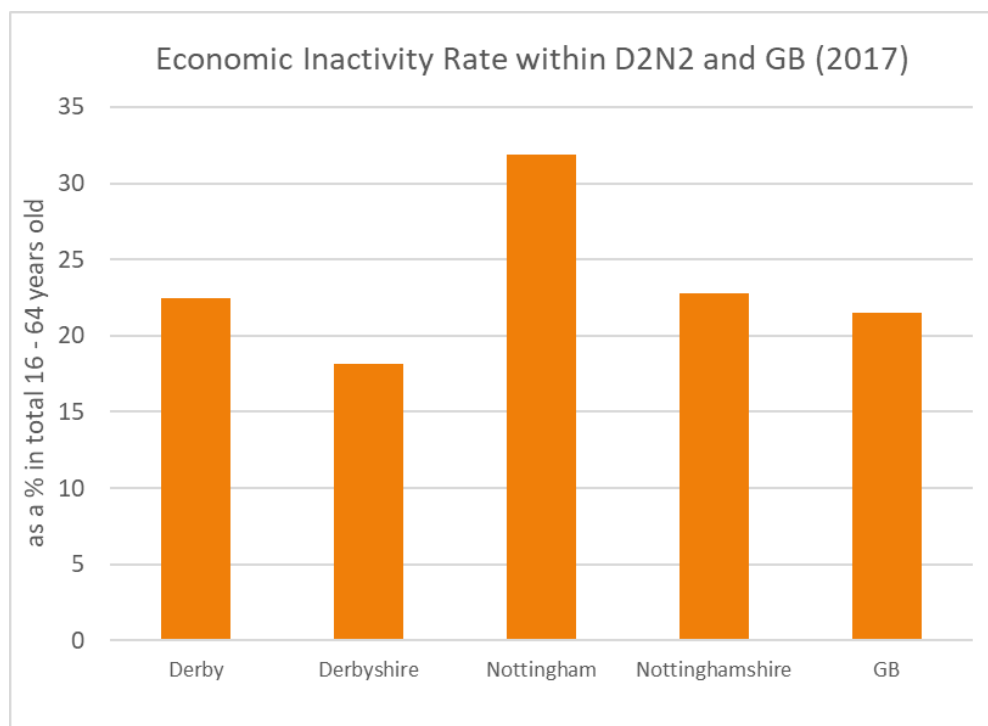
Chart to the right looks at the economically inactive population within the total population aged 16 - 64 of D2N2. The economically inactive do not hold a job, are not seeking work and/or are not available to start work in the next two weeks due to study, family, disability and/or illness.

Nottingham stands out with 45% of the economically inactive residents being in study, much higher than the UK average.

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With the exception of Nottingham, **the primary reasons for economic inactivity are long-term sickness** and looking after family and home.

Economically Inactive Residents by Reason in D2N2
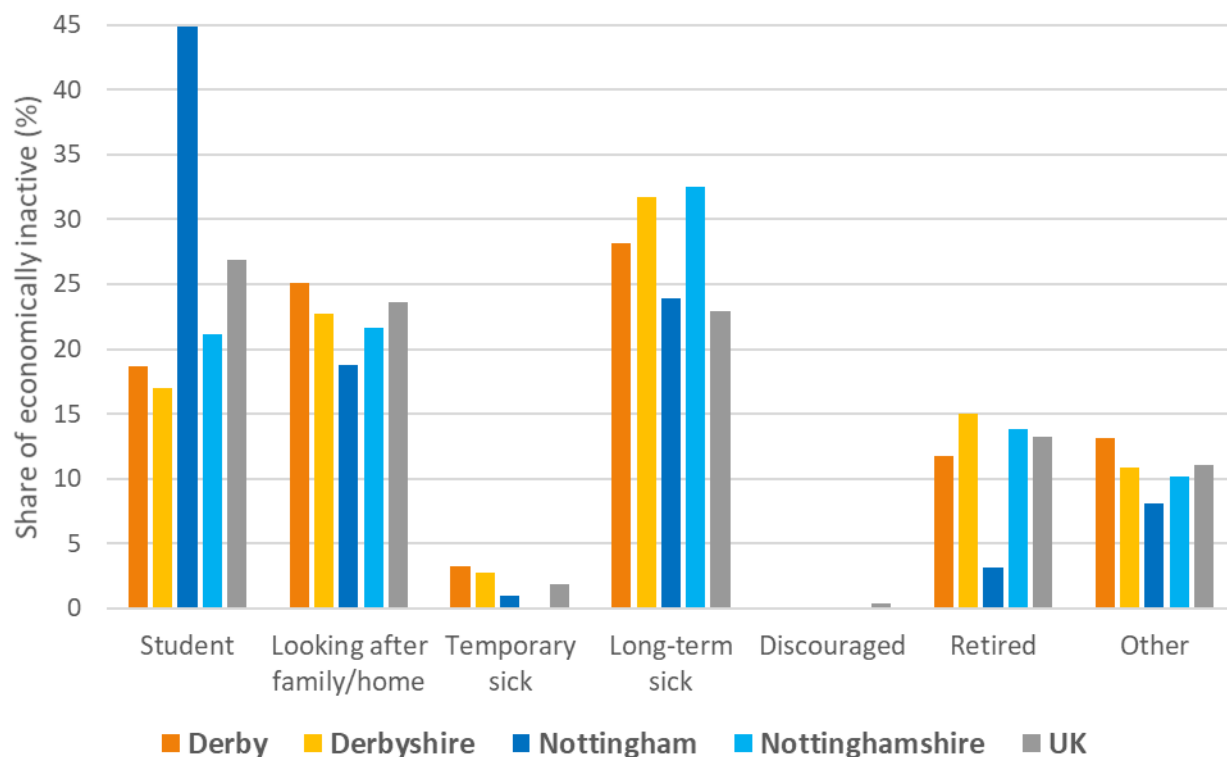
With the exception of Nottingham, the primary reasons for economic inactivity are long-term sickness and looking after family and home.

Derby, Derbyshire and Nottinghamshire have higher proportions of long-term sick and in retirement than the UK average.

Source: University of Derby analysis of ONS Annual Population Survey (2018), NOMIS (2019)

D2N2 **education providers** are **rated higher than East Midlands** but lower than and England levels

OFSTED Effectiveness Rating (2018)

■ Outstanding (%)　■ Good (%)　■ Requires improvement (%)　■ Inadequate (%)

	Outstanding (%)	Good (%)	Requires improvement (%)	Inadequate (%)
Derby	17	57	17	9
Derbyshire	14	67	13	6
Nottingham	20	60	13	8
Nottinghamshire	16	69	11	3
East Midlands	17	57	17	9
England	20	65	11	4
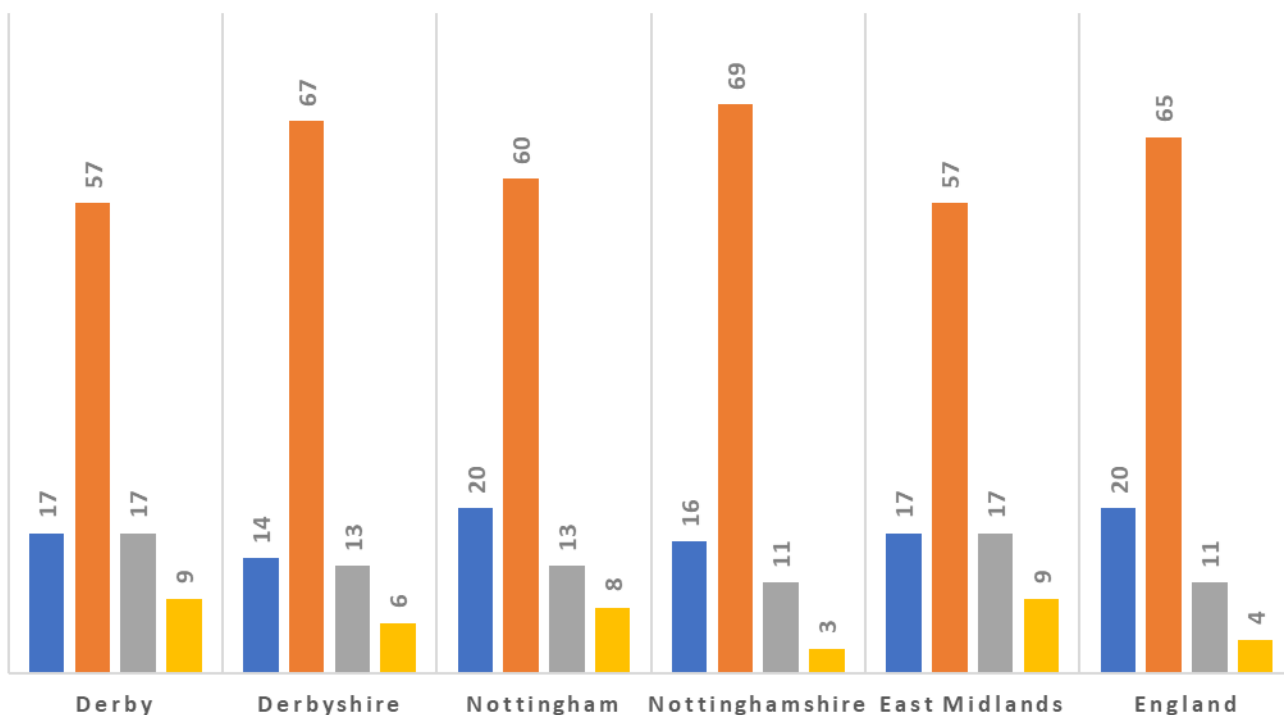
Nottinghamshire stands out with the same proportion of outstanding and good providers and with a lower proportion of inadequate providers compared to England.

Nottingham had the highest proportion of outstanding providers in D2N2, matching the value for England.

Derby, on the other hand, scored worse compared with the rest of D2N2 and England.

Source: University of Derby analysis of OFSTED (2018)

A **higher percentage of pupils in Nottinghamshire and Derbyshire achieved a strong 9-5 in English and Maths** than in East Midlands and England.

GCSE attainment for D2N2 and region in 2017/18

	Derby	Derbyshire	Nottingham	Nottinghamshire	East Midlands	England
% of pupils who achieved a grade 9-5 in GCSE English and Maths	38.2	42.7	32.8	45.6	42	40.2
% of pupils who achieved all components (9-5) in English Baccalaureate	15.5	13.3	8.8	16.2	15	15.4

- ■ % of pupils who achieved a grade 9-5 in GCSE English and Maths
- ■ % of pupils who achieved all components (9-5) in English Baccalaureate

The English Baccalaureate is a group of GCSE subjects, including English, maths, science, history or geography, and a foreign language which is recommended by Britain's most prestigious universities. Pupils must achieve a strong 9-5 pass in English and Maths, and a grade C or above in the other elements.

In D2N2, from 29% (Nottingham) to 41% (Derby) of students entered for all components of Ebacc in 2017/18 compared to 38% in all state-funded schools nationally.

Here again, Nottinghamshire shows the highest percentage of pupils with a strong 9-5 pass, above the regional and national average.

People:
Skills Pipeline

The majority of 16 and 17-year-olds participate in full time education and training.
Derby is lagging behind on full-time education compared to other areas but has a higher proportion of work-based learning.

Proportion of 16-17 year olds recorded in education and training

	Derby	Derbyshire	Nottingham	Nottinghamshire	East Midlands	England
Count	5540	15220	6,440	16,290	97,970	1,136,320
Employment combined with study	1%	2.0%	1%	1%	0.6%	0.7%
Work based learning	7.0%	1%	1.1%	1%	1.5%	1.2%
Apprenticeship	8%	9%	5%	4%	6%	6%
Full time education and training	73%	81%	84%	87%	83%	84%

Legend: ■ Full time education and training ■ Apprenticeship ■ Work based learning ■ Employment combined with study

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Both Derby and Nottingham experience higher than average NEET rates.

Number of 16-17-year-olds known to the LAs (2017)

	Males	Females
Derby	2,910	2,670
Derbyshire	7,650	7,410
Nottingham	3,200	3,050
Nottinghamshire	8,110	7,750

- Males
- Females
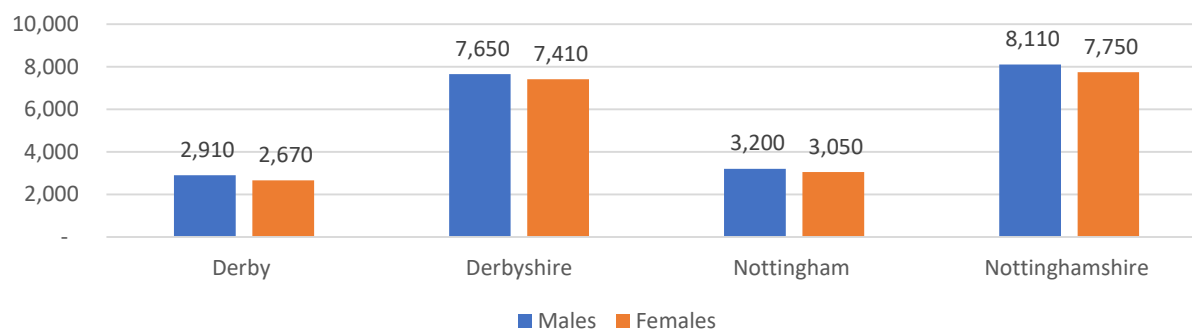
Proportion of which known to be NEET
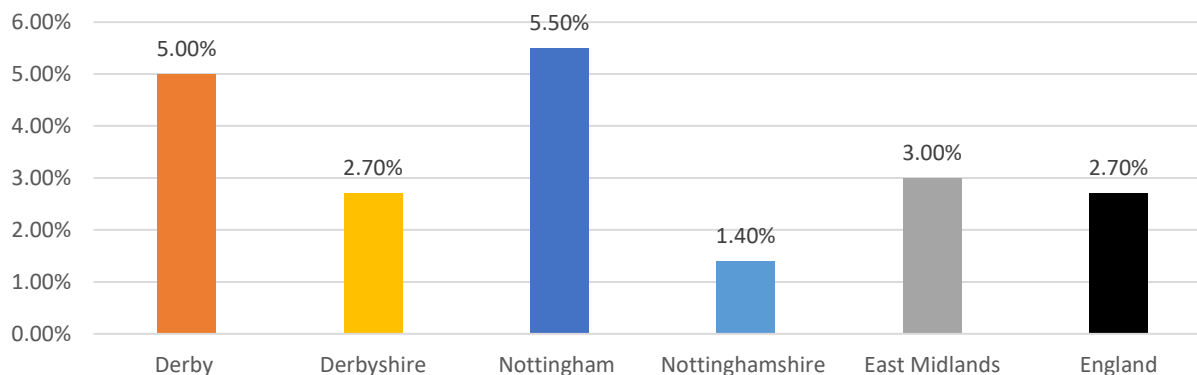
Derby	5.00%
Derbyshire	2.70%
Nottingham	5.50%
Nottinghamshire	1.40%
East Midlands	3.00%
England	2.70%

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D2N2 has **lower than average share of residents with higher qualifications** and **higher share of residents with low or no qualifications.**

Qualifications profile for D2N2 and comparators (2018)

Legend: D2N2 | Greater Lincolnshire | Leicester and Leicestershire | East Midlands | UK

Categories: NVQ4+ | NVQ3 | NVQ2 | NVQ1 & No qual. | Other Qualifications
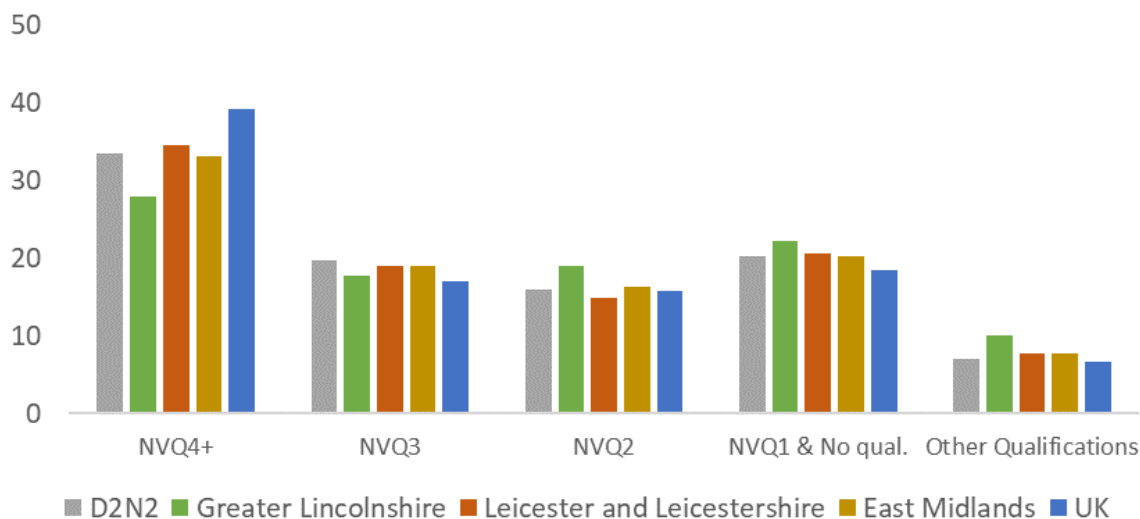
The chart compares the D2N2 skills profile with some of its neighboring LEP's, the wider region and the UK.

Leicester and Leicestershire LEP has the highest share of residents with NVQ Level 4 (34.5%) while 33.4% of residents in D2N2 have NVQ Level 4 or above.

D2N2 has the lowest proportion of residents with low or no qualifications (20.2%) which is the same as the region, however the national figure stands at 18.4%.

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Larger proportion of younger population is qualified to a higher level

Qualifications profile for residents aged 20 - 29 (2018)

Legend: Derby, Derbyshire, Nottingham, Nottinghamshire, England
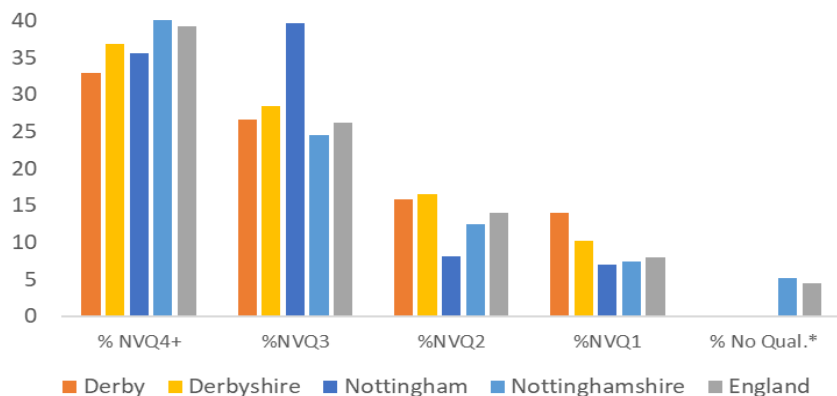
Qualifications profile for residents aged 50 - 64 (2018)

Legend: Derby, Derbyshire, Nottingham, Nottinghamshire, England
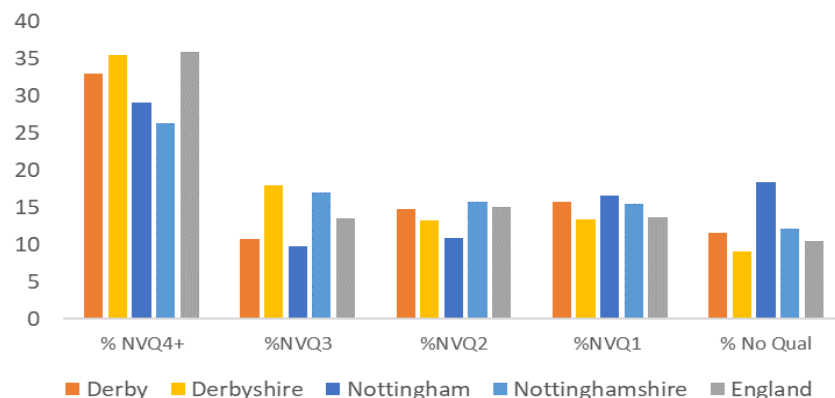
The charts above depict qualifications split by age groups 20-29 and 50-64. There are noticeable differences. First, for both cohorts, the shares of residents with qualifications at NVQ4 level and above tends to be below the proportion for England.

Second, compared with the 50-64-year-olds, a higher proportion of the younger cohort has qualification at NVQ4-level and above. Third, larger proportions of the older cohort have lower-level qualifications. Fourth, a striking difference is relatively high proportion of older

residents with no qualifications, higher than the share for England.

For Nottingham and Nottinghamshire, there is a noticeable drop in the share of qualifications at levels NVQ3, NVQ4 and above between the 20-29-years old cohort and the 50-64-years-old cohort. This may suggest that the majority of university graduates and young qualified workers leave the area after being resident for a while.

Rushcliffe has the most competitive skills profile in D2N2 with the **highest proportion of its residents with higher qualifications** (62%)

Spatial distribution of skills in D2N2 (2018)

UK NVQ4+ %

UK NVQ1 or no qual %

■ NVQ4+   ■ NVQ3 only   ■ NVQ2 only   ■ NVQ1 only or no qual
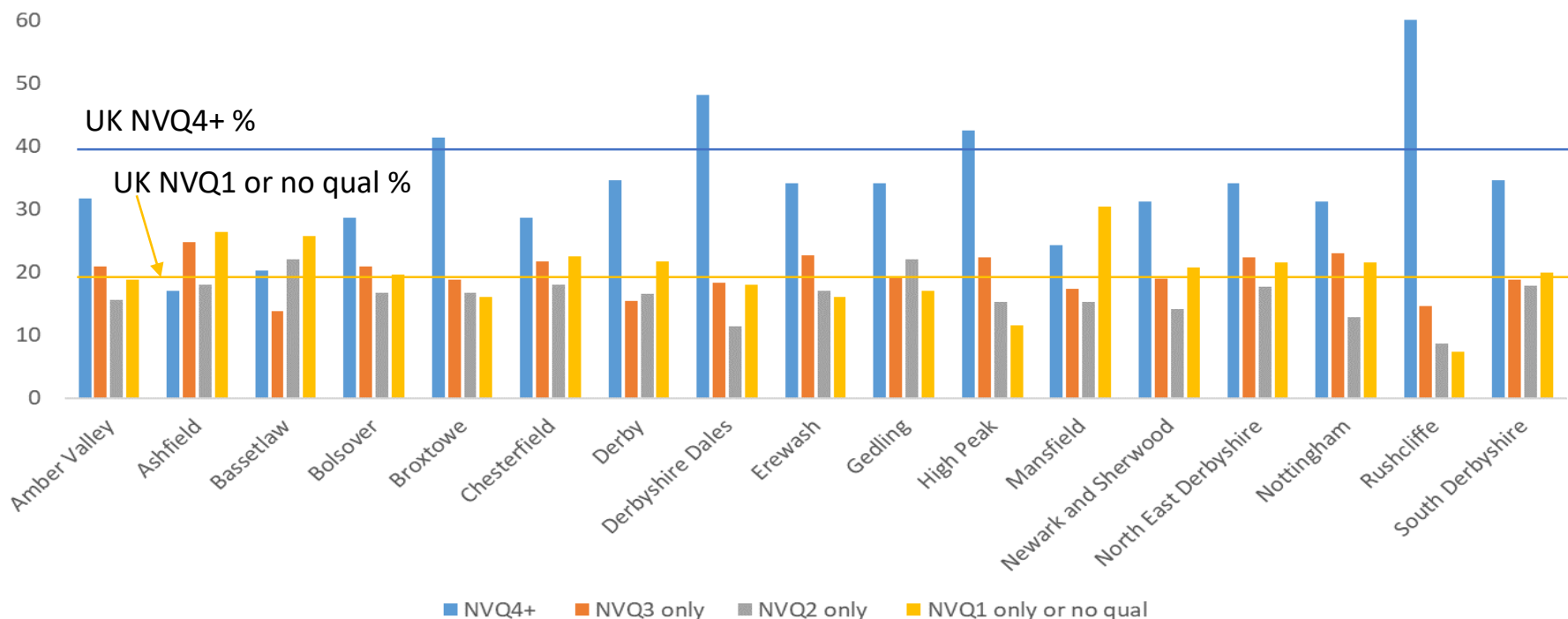
In contrast, Ashfield, Bassetlaw and Mansfield have higher proportions of their residents with low or no and lower proportions of residents with higher qualifications (NVQ Level 4 or above)

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People:
Skills Profile
Trend

The change in lower and higher qualifications for D2N2 has been less dramatic than the evolution for England as a whole
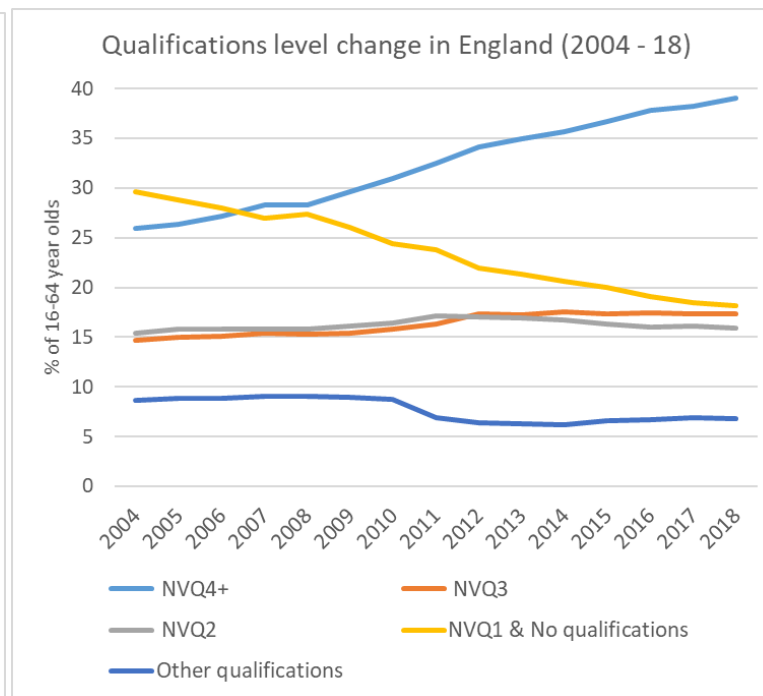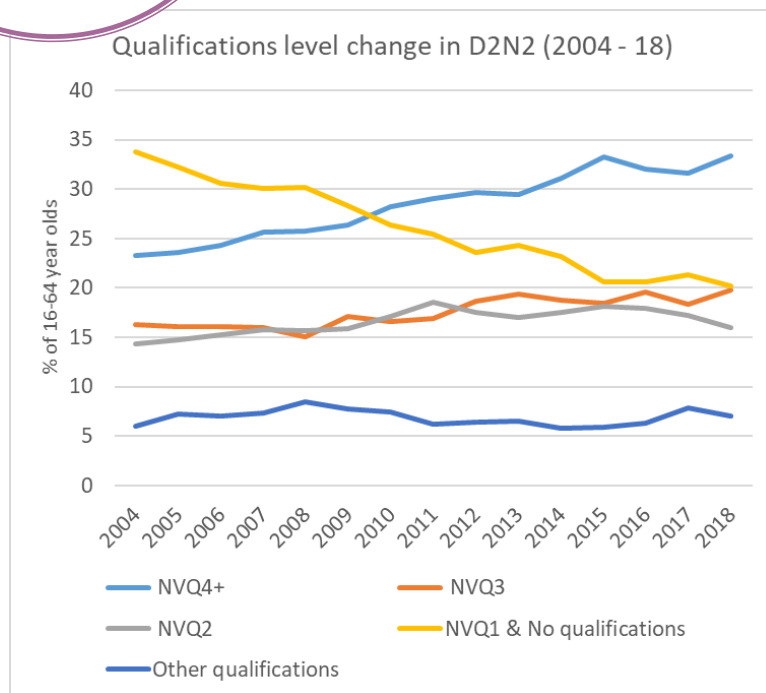
Since 2004, the proportion of low qualifications (NVQ1 or no qualifications) has been dropping significantly while the proportion of higher qualifications (NVQ4 and above) has been increasing steadily.

However, nationally the share of qualifications at NVQ4+ has risen higher and the share of qualifications at NVQ1 has fallen lower than in D2N2. D2N2 also features a slightly higher proportion of NVQ3-level qualifications than England.

D2N2 has lower proportion of managers, professionals and technical workers, and higher proportion of lower skilled occupations

Occupations profile in D2N2 (2018)

Legend: Derby, Derbyshire, Nottingham, Nottinghamshire, D2N2, England
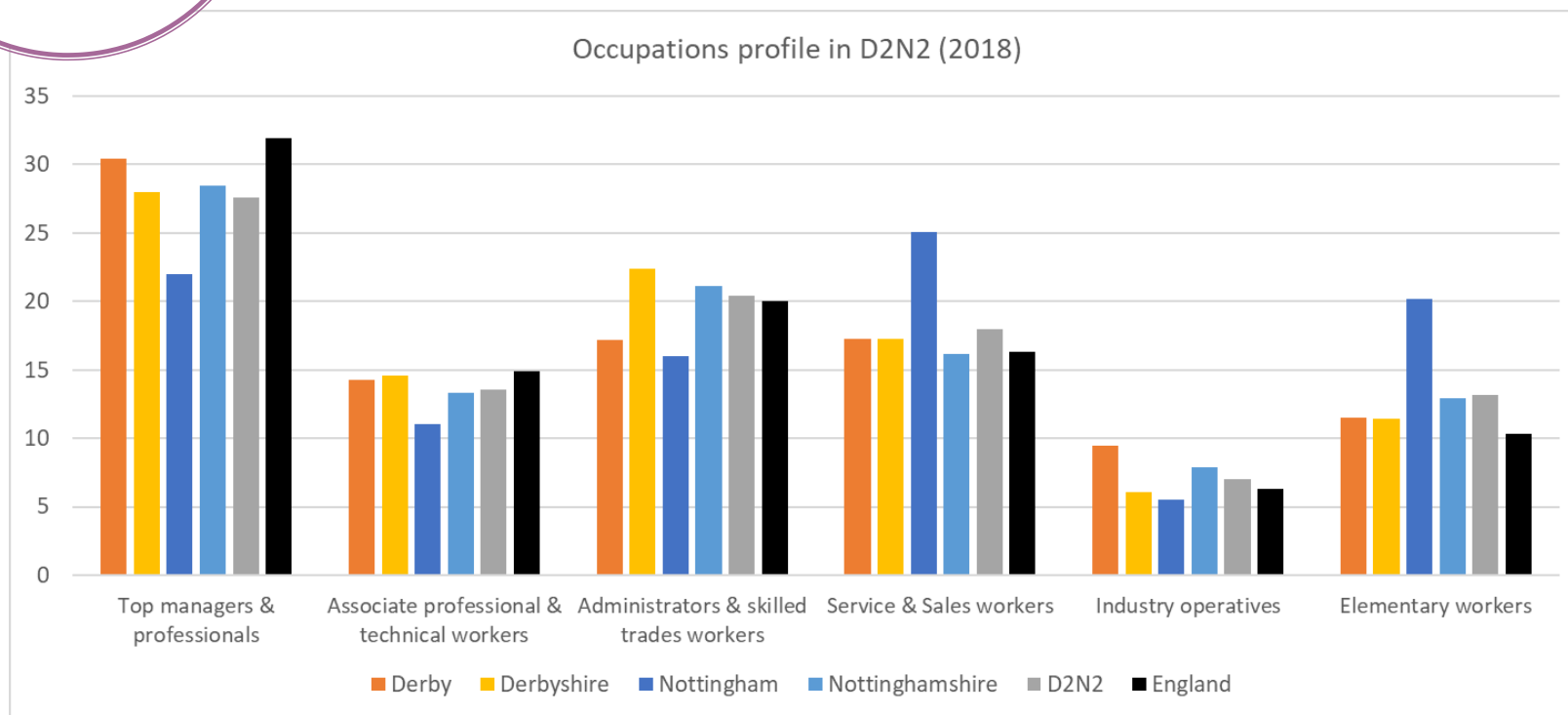
Derby, Derbyshire and Nottinghamshire have more professional residents compared to Nottingham, but their proportion is below the English average. Conversely, Nottingham has higher proportions of low skilled workers and elementary works. This is a reflection on the skills profile where many Nottingham residents have lower levels of NVQ Level qualifications

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People: Occupational Profile

Rushcliffe has the highest proportion of population working in high level roles (46%), which reflects the higher proportion of high skills of its residents

Spatial distribution of occupations in D2N2 (2018)
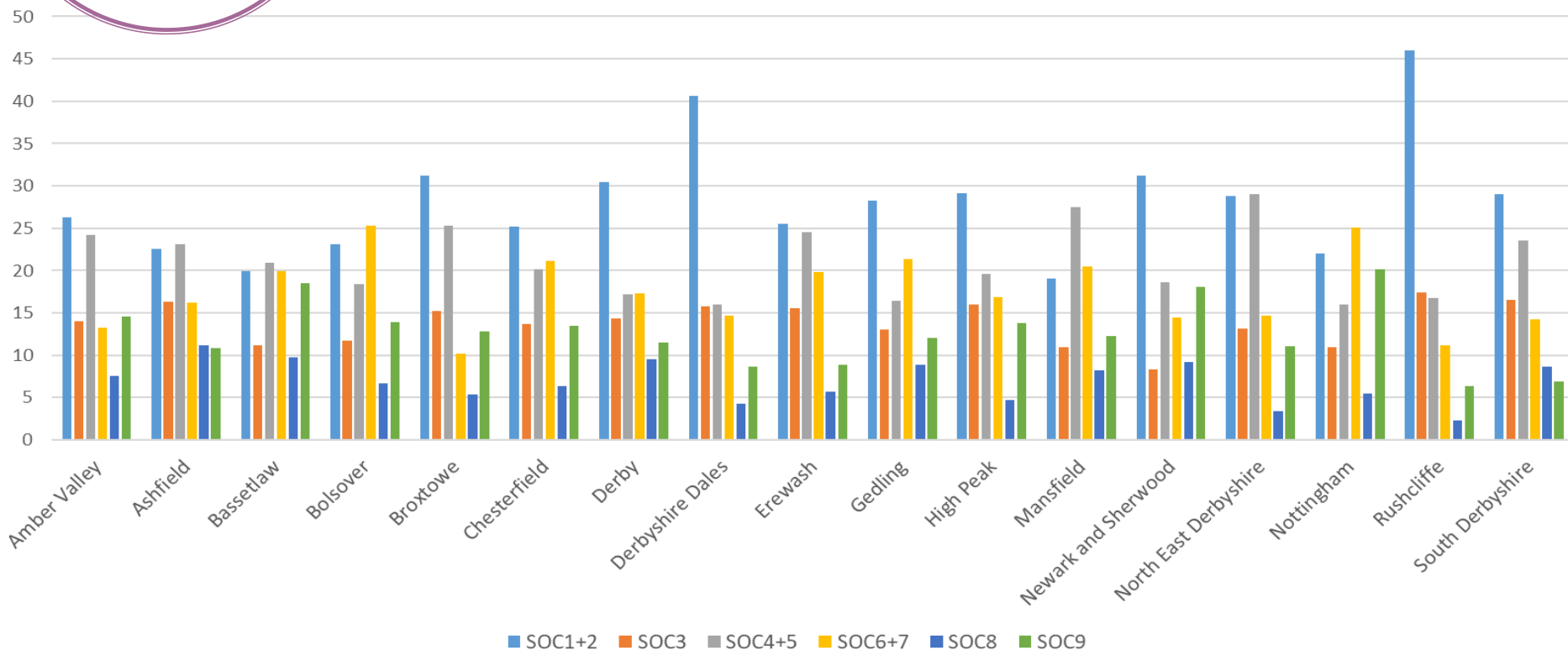
Derbyshire Dales (40.6%), Broxtowe, Newark and Sherwood (each 31.2%) and Derby (30.4%) are the other areas that have a higher number of residents working in high-level jobs.

In contrast, Nottingham (50.8%), Bassetlaw (58.1%), and Bolsover (45.9%) are among the areas where a high number of low skilled workers including industry operatives and elementary workers reside.

The **growth in top managers and professionals has lagged behind** the national average while the proportion of elementary and low skills service jobs have increased

Occupational change for D2N2 (2004 - 2018)
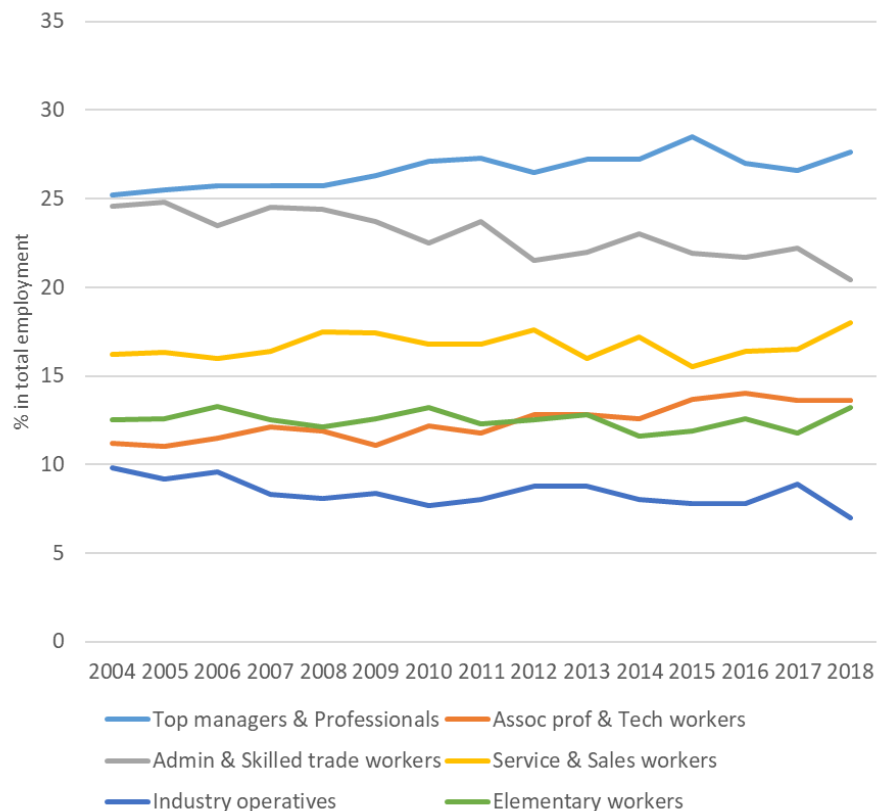
Occupational change for England (2004 - 2018)

Legend (both charts):
- Top managers & Professionals
- Assoc prof & Tech workers
- Admin & Skilled trade workers
- Service & Sales workers
- Industry operatives
- Elementary workers

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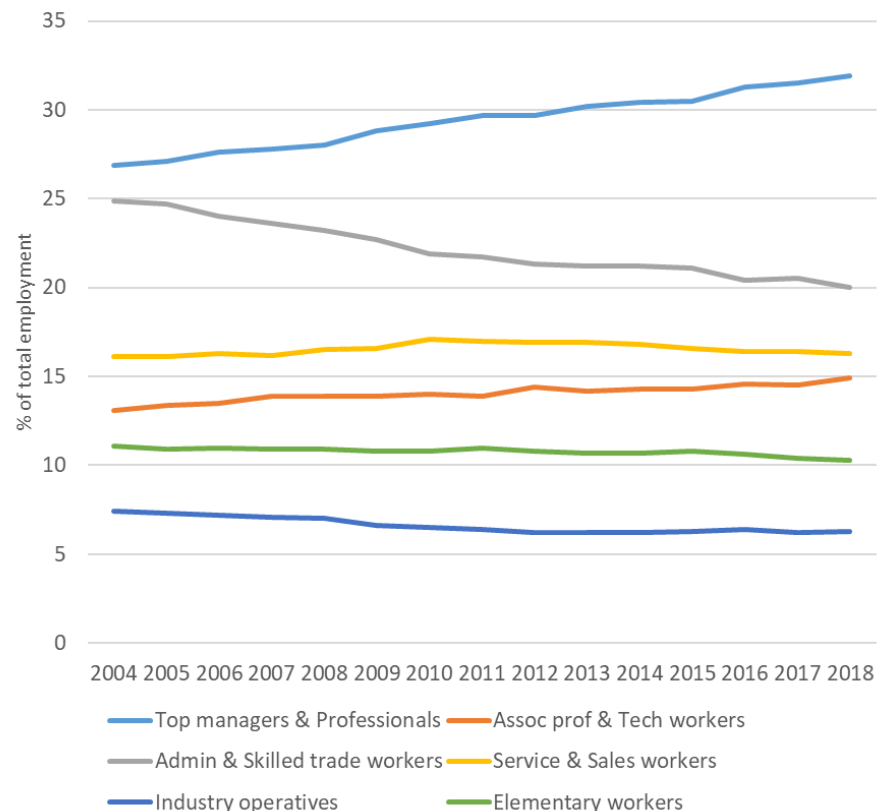
Derby and Derbyshire have been manufacturing-focused with this sector remaining significantly above the national average. A higher proportion of Nottingham workforce tend to work in administrative and support roles

Major employing sectors in D2N2 (2017)

Legend: Derby, Derbyshire, Nottingham, Nottinghamshire, D2N2, England

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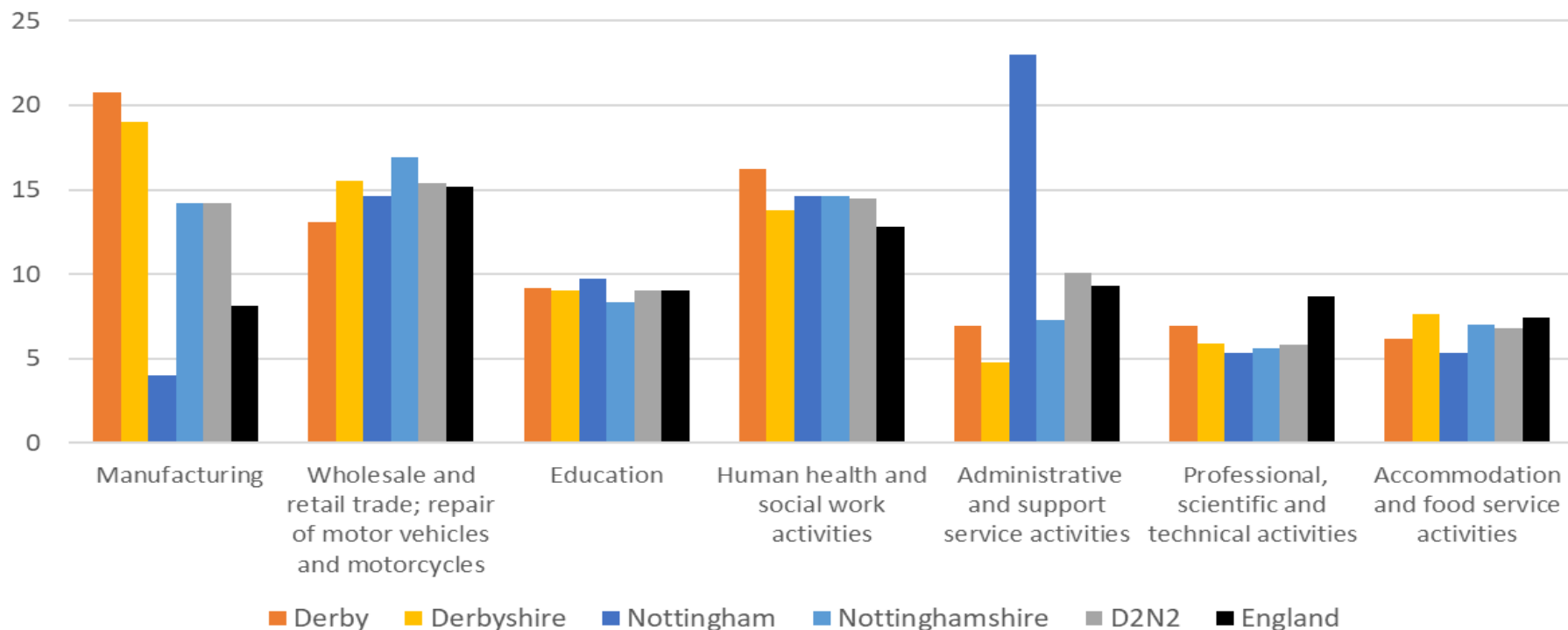
D2N2 **have fewer vacancies per establishment** with vacancies than the national average (2.7).

Vacancies in D2N2 (2017)

- ■ Have at least one vacancy
- ■ Have at least one vacancy that is hard-to-fill
- ■ Have a skills shortage vacancy (prompted or unprompted)
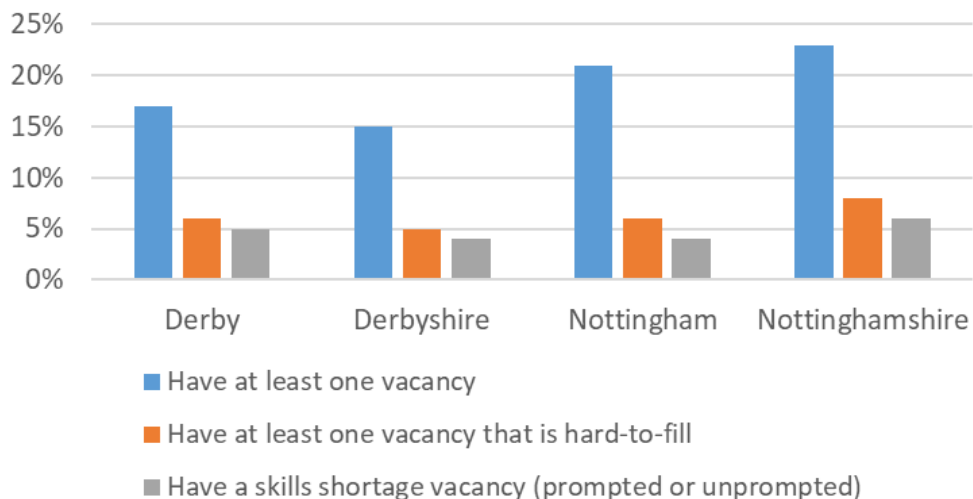
Nottinghamshire stands out in both absolute and relative terms when it comes to vacancies. In Nottinghamshire, 23% of establishments have at least one vacancy Employers in Nottinghamshire also report a higher skills shortage vacancy than the rest of D2N2.

However, the firms in Nottingham record the highest average vacancies per establishment with vacancies (2.4) while the figure for the firms in Derby stands at 2.

	Total employer base	Have at least one vacancy	Have at least one vacancy that is hard-to-fill	Have a skills shortage vacancy (prompted or unprompted)	Average vacancies per establishment with vacancies
Derby	5882	984	368	266	2
Derbyshire	23442	3413	1272	835	2.3
Nottingham	7677	1617	445	338	2.4
Nottinghamshire	20201	4635	1574	1295	2.2

57% identified the quality of applicants as the main reason for unfilled vacancies.

Main reasons for recruitment difficulties (hard to fill vacancies) in D2N2 (2017)

■ Derby   ■ Derbyshire   ■ Nottingham   ■ Nottinghamshire   ■ D2N2
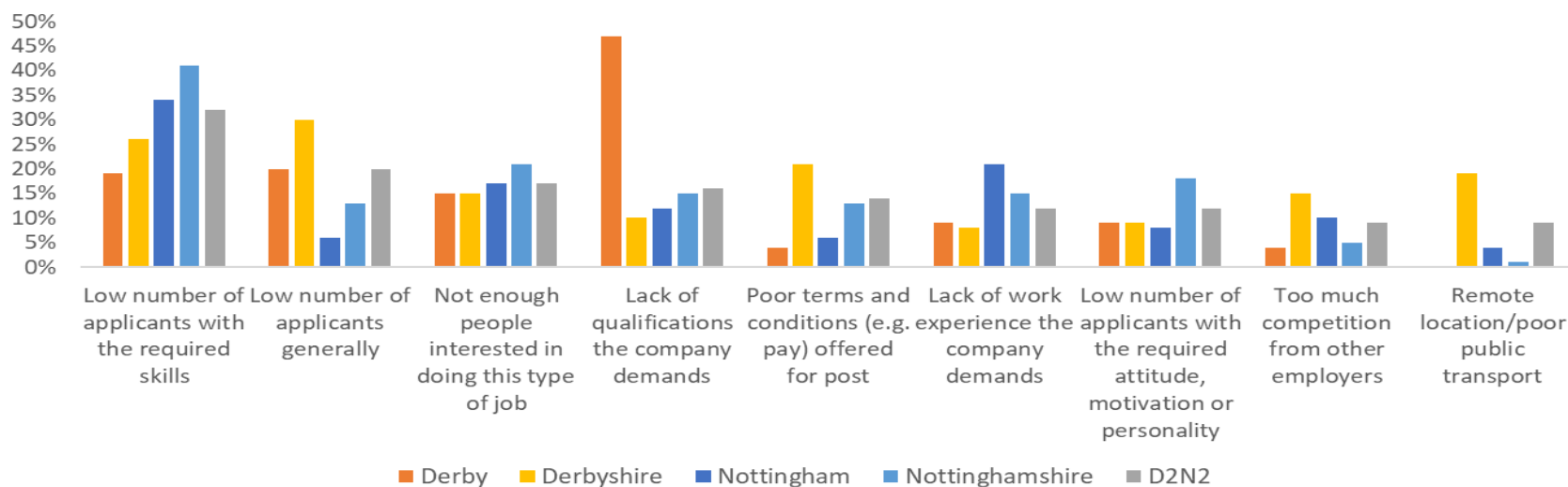
A low number of applicants were identified as a further reason by 38% of businesses within D2N2 area. Finally, 34% of businesses reported that contextual factors contribute to the difficulty in filling some vacancies (these include low pay, not being fulltime/permanent and jobs with unsociable hours/shifts).

There is a clear indication of a skill mismatch between job seekers and employers in the area. The D2N2 area is within a commutable distance from several major cities such as Birmingham, Leicester and Sheffield. Therefore, it is important to create measures that would make the D2N2 area attractive to the economically active population.

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Resident earnings in D2N2 are below regional and national levels

Gross Weekly Pay (£)
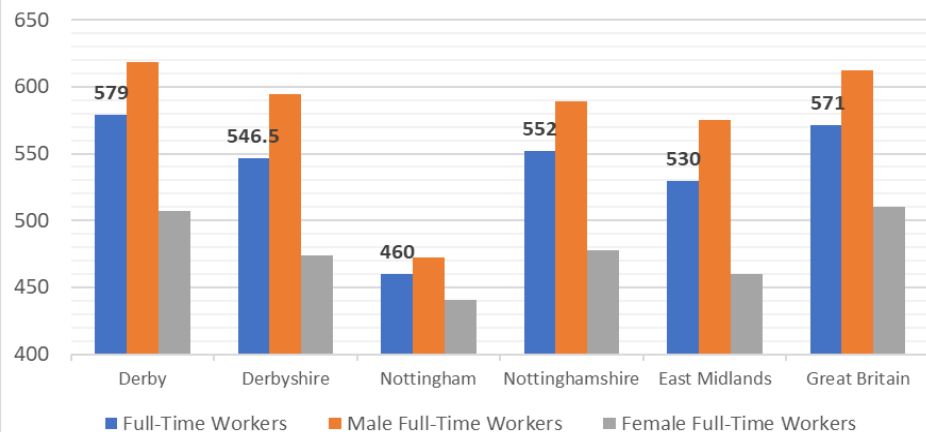
Hourly Pay - Excluding Overtime (£)
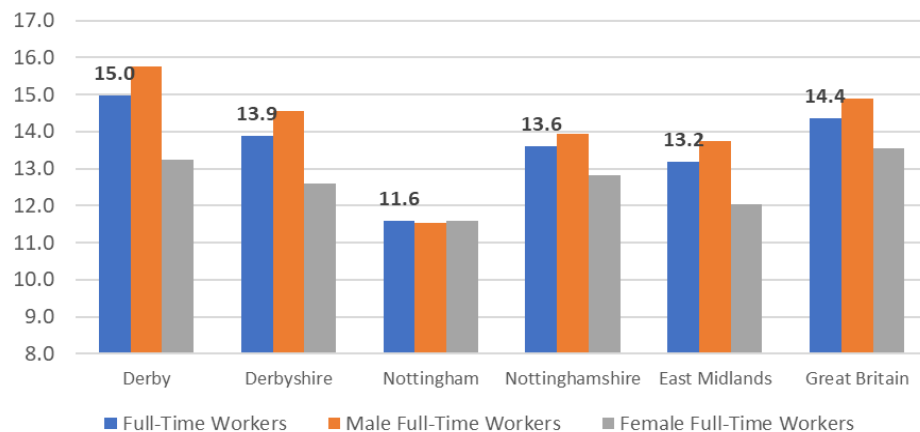
In the two charts above, the pattern is the same but the differences are less pronounced in hourly pay – i.e. in Nottingham not only are the workers paid lower but they also work fewer hours per week.

Similarly, the charts also show that the gender pay gap is reduced when comparing hourly pay.
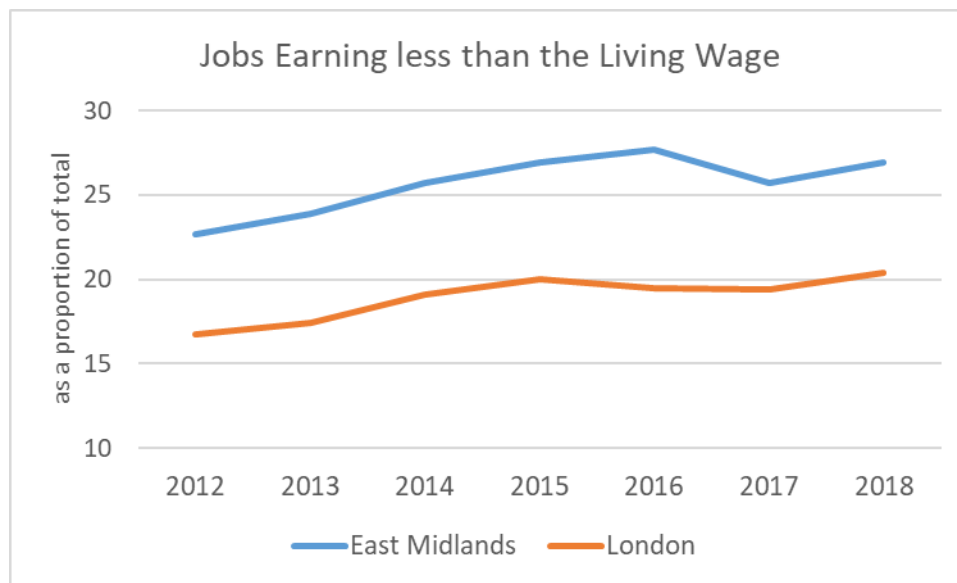
D2N2 have a **higher proportion of jobs paying below the living wage** than the UK average

Share of workplace jobs under the living wage for D2N2
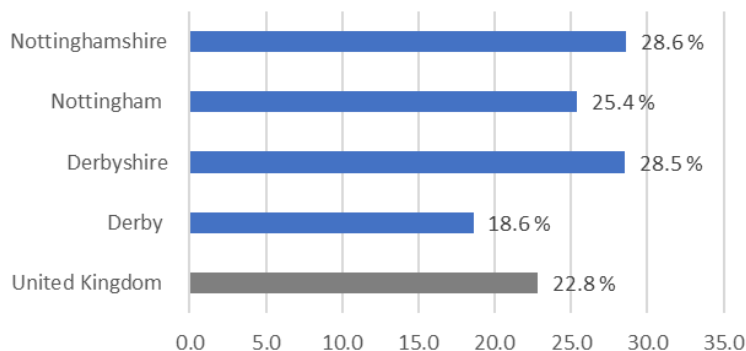
	Jobs earning below the National Living Wage (thousands)
Derby	23
Derbyshire	79
Nottingham	46
Nottinghamshire	82
United Kingdom	6,286

This is worrying, since it indicates that a substantial proportion of working adults are struggling to cover the cost of living (in-work poverty). This is a major obstacle in achieving inclusive growth. Even more worrying is the fact that the proportion of low paying jobs has increased over the years (see chart below).

Jobs Earning less than the Living Wage

Note: Calculations are based on the National Living wage of £8.75 per hour (outside of London) from the Living Wage Foundation Source: University of Derby analysis of ONS ONS Annual survey of hours and earnings (2018)

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People:
The Scale of Retraining and Education

Over **57,400 jobs** are D2N2 at **high risk of automation. Around 413,000 more jobs** will likely experience **various degrees of task automation**

Top 10 LEPs by the number of jobs at high risk of automation
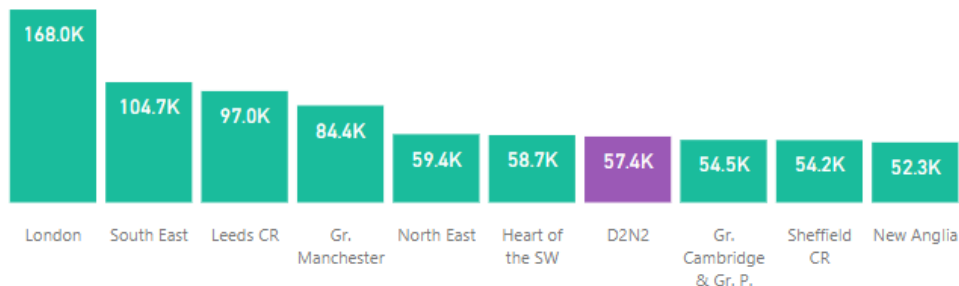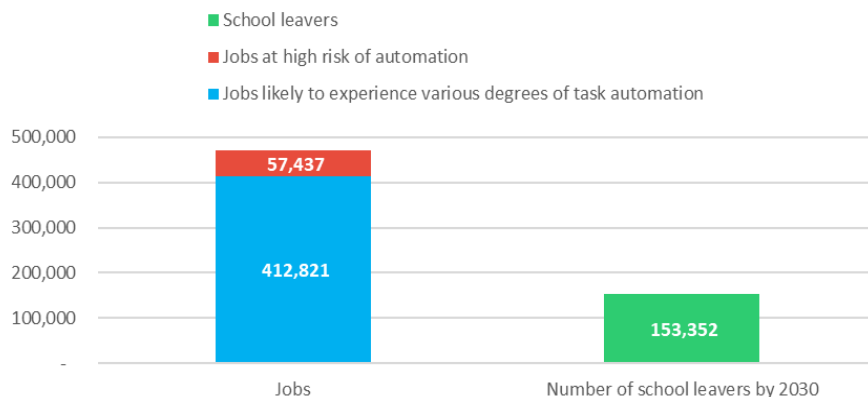
The ONS has analysed the jobs of 20 million people in England in 2017, and has found that 7.4% are at high risk of automation, compared to slightly higher 7.5% in D2N2.

Automation involves replacing tasks currently done by workers with technology, which could include computer programs, algorithms, or robots.

ONS estimates that women, young people, and those who work part-time are most likely to work in roles that are at high risk of automation.

The number of jobs likely to experience various degrees of automation is three times higher than the expected number of school leavers in D2N2 by 2030.
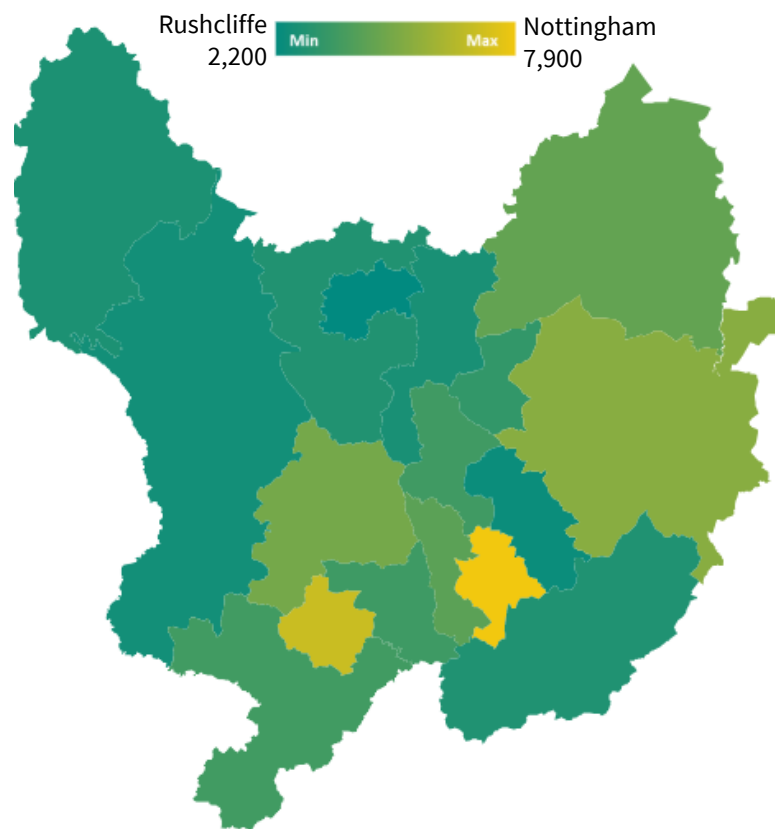
The scale of retraining and education needs

- School leavers
- Jobs at high risk of automation
- Jobs likely to experience various degrees of task automation

While jobs in Mansfield, Ashfield and Newark & Sherwood have **higher probability of being automated**, there is a large number of such jobs in the cities including jobs at high risk of automation.

Probability of automation by local authority

Rushcliffe
39%

Min ▬▬▬ Max

Mansfield
57%

Number of jobs at high risk of automation

Rushcliffe
2,200

Min ▬▬▬ Max

Nottingham
7,900
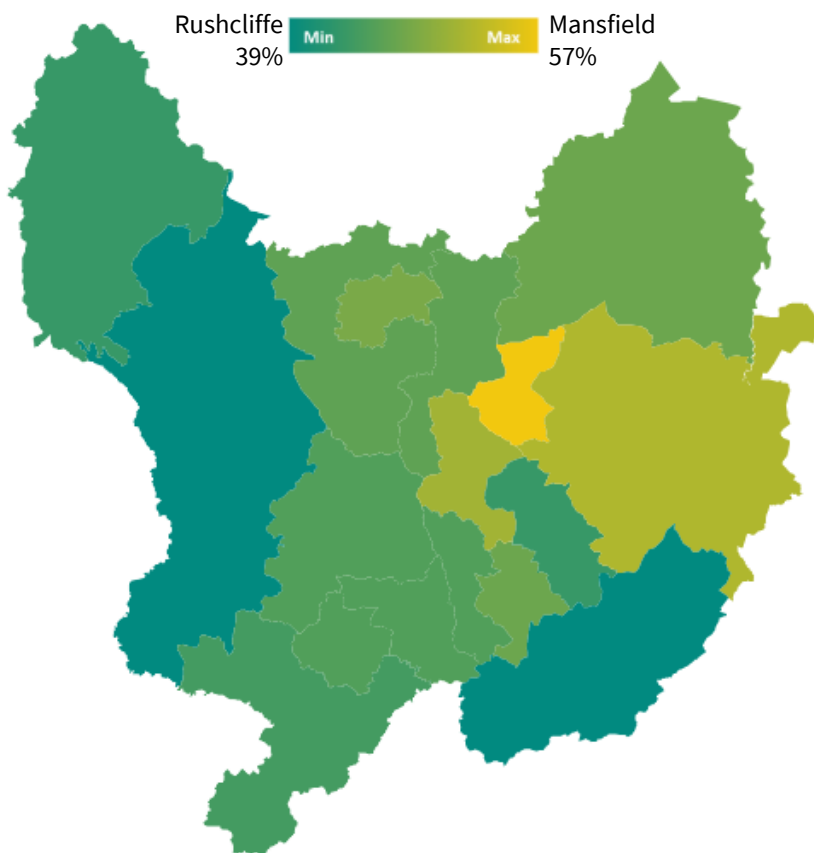
13 out of 17 local authorities have been identified as social mobility coldspots*

Social mobility showing national ranking
(1= highest rank district and
324 = lowest ranked district)

High Peak = rank 233

Bassetlaw rank 266

Chesterfield = rank 285

North East Derbyshire = rank 255

Bolsover = rank 286

Derbyshire Dales = rank 126

Mansfield = rank 315

Ashfield = rank 317

Newark and Sherwood = rank 323

Amber Valley = rank 302

Broxtowe = rank 284

Gedling = rank 272

Nottingham = rank 312

Erewash = rank 278

Derby = rank 316

Rushcliffe = rank 42

South Derbyshire = rank 311

Social mobility in quintiles
(There are no LEP districts in quintile 3)
- Rank 1-64.8
- Rank 64.9-129.6
- Rank 194.5-259.2
- Rank 259.3-324

Source: State of the Nation, 2017, Social Mobility Commission
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Ordnance Survey Licence Number [100023251]

Social Mobility Index identifies the most and the least socially mobile areas of the country by examining in detail the chances available to young people from poorer backgrounds to get the educational qualifications they need to succeed in life, and the opportunities in the local area to convert those qualifications into a good job and a decent standard of living.

The index uses a suite of indicators that are related to the chances of experiencing upward social mobility. The Index focuses on two types of outcome:

- **Educational attainment of those from poorer backgrounds** in each local area – from the early years, through primary and secondary school, to post-16 outcomes and higher education participation. This reflects the academic literature that suggests that this is the most important driver of a child's life chances
- **Outcomes achieved by adults** in the area – average income, prevalence of low paid work, availability of professional jobs, home ownership and the affordability of housing. This measures the prospects that people have of converting good educational attainment into good adulthood outcomes.
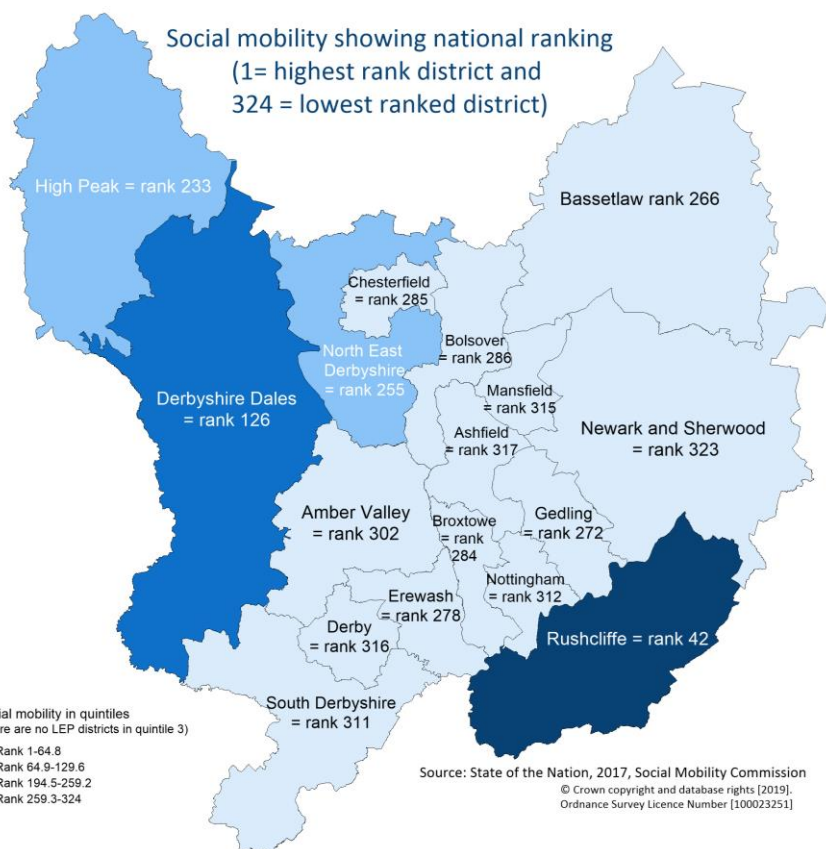
*Note: Social mobility cold spots are areas that falls within the worst 20% of areas nationally on social mobility
Source: State of the Nation, 2017, Social Mobility Commission; Derbyshire County Council mapping

Infrastructure

- Growth corridors
- Congestion and travel times
- HS2 opportunities
- Midlands Rail Hub opportunities
- Major Road Network
- Digital infrastructure
- Electricity infrastructure and demand projections
- Housing stock and affordability

Derby
Derbyshire
Nottingham
Nottinghamshire

D2N2 is part of several **intensive growth corridors** and Nottingham-Derby strategic economic hub
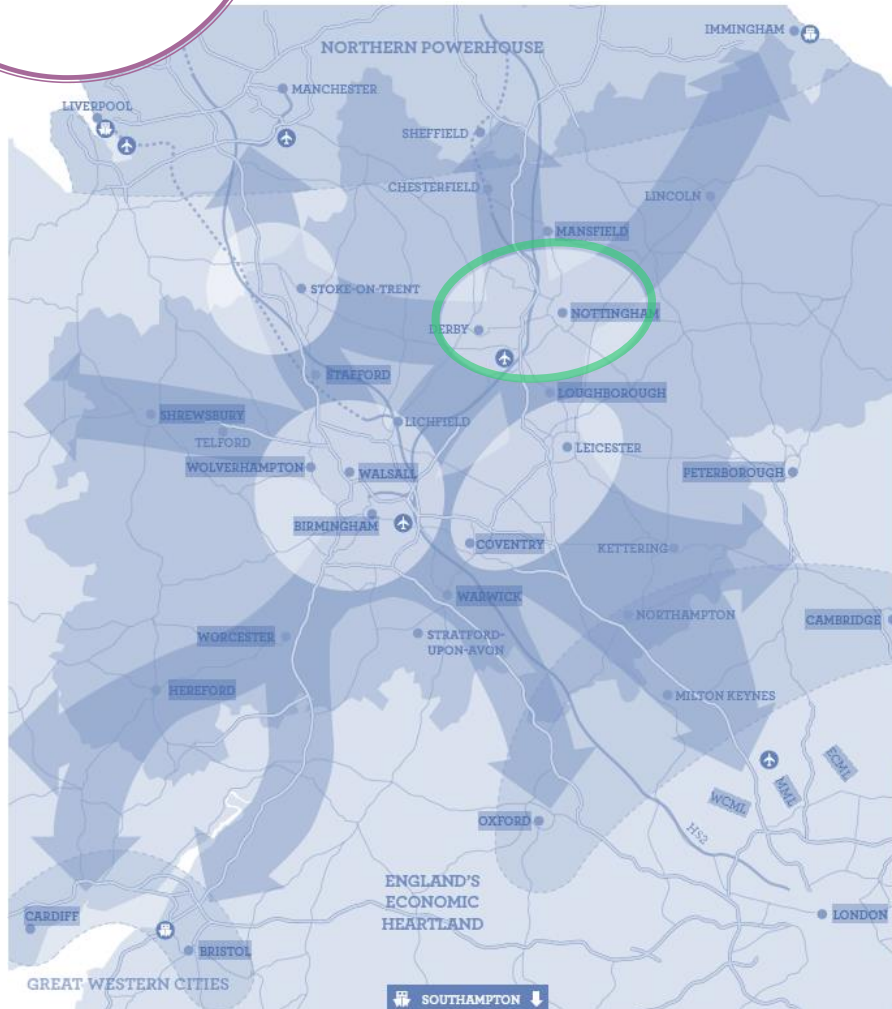
D2N2 has strong links with neighboring areas. These are likely to be reinforced by investment in High Speed 2 and the delivery of the strategy outlined by Midlands Connect. The major growth corridors spanning D2N2 are:

- Nottingham and Derby ↔ Chesterfield ↔ the North
- Humber Ports ↔ Lincoln ↔ Nottingham ↔ Derby ↔ Birmingham
- Nottingham ↔ Derby ↔ North Staffordshire
- Nottingham ↔ Leicester ↔ Coventry ↔ Warwick and Thames Valley

Transport for the North also highlights the importance of strategic North-South and East-West Strategic Development Corridors, connecting major economic centres of the Midlands, Wales, the North, and Scotland.

D2N2 cities and towns suffer from congestion, which results in higher costs to businesses and local communities

Derbyshire

Nottinghamshire
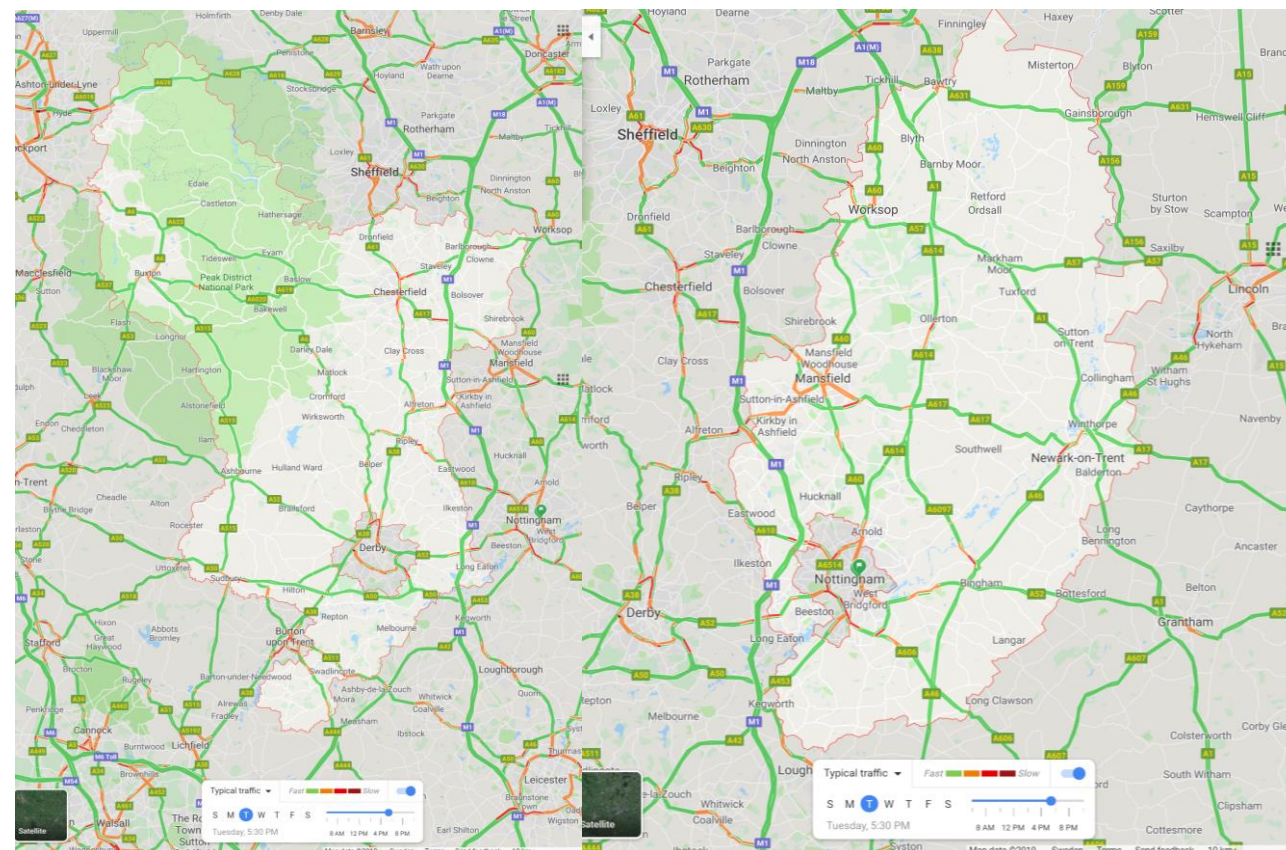
Typical traffic patterns during morning and afternoon peak hours show that the main cities and towns of D2N2 region suffer from congestion which results in increased journey times and delays.

The majority of D2N2 area is in an area of 20-40 minutes to a job centre, in line of the UK average of 29 minutes .

According to estimates by INRI, congestion costs in Nottingham and Derby area alone could amount to £850 million by 2025.

In addition, congestion and high car dependency are among the causes for air quality issues.

Note: The maps show typical traffic patters during evening peak hours. Morning peak hour maps are available in the Appendix. Source: Google Maps; Department for Transport; INRIX Roadways Analytics (2016).

Strategic Infrastructure Priorities
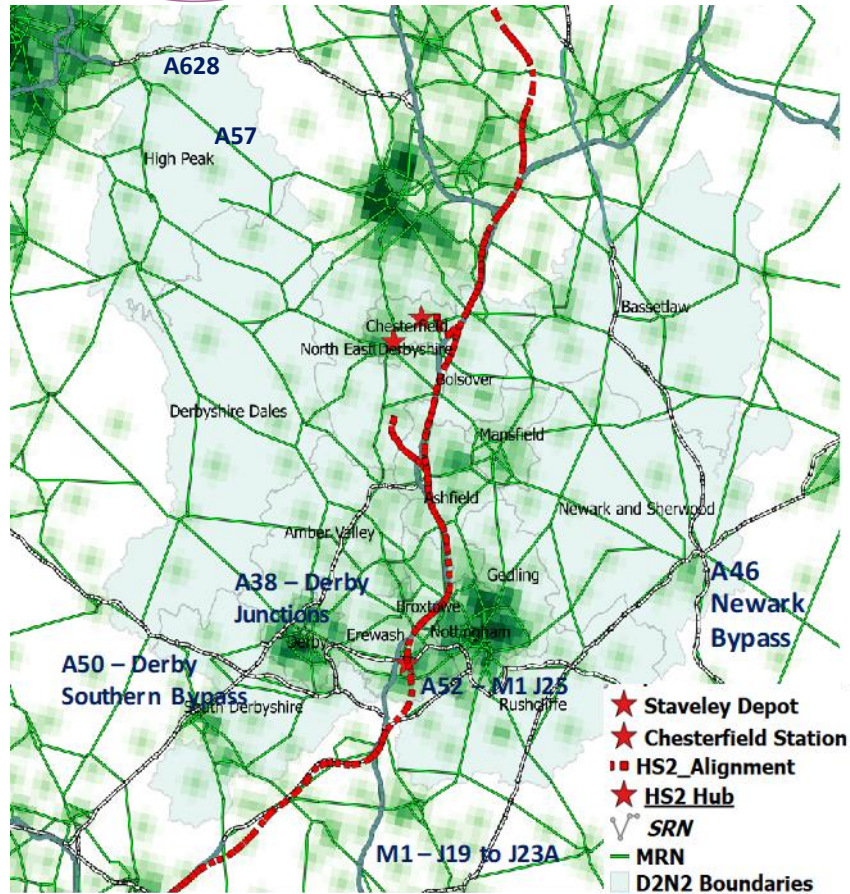
Strategic Highways:

A46 – Newark Northern Bypass: Key project for Midlands Engine, to boost East-West connectivity, improve freight traffic, facilitate housing and employment sites;

A38 – Derby Junctions: Reduce congestion in Derby surrounding areas while improving journey time variability in this road that connects A5 to M1 J28;

A52 – M1 J25: Enhance connectivity between Derby and Nottingham, while providing car access for HS2 East Midlands Hub from both cities and M1;

A50 – West of Utoxeter and Infinity Park Link: By connecting M6 to M1 an increase in reliability will be experienced by road users and it will support growth along the corridor, vital for multinational companies;

M1 – Smart Motorway J19 to J23A: Improve in journey time variability from D2N2 region to the South (EM Airport);

A57/A628: reduce congestion, improve the reliability of journeys , and re-connect local communities along the trans-Pennine routes

Strategic Railways and connectivity:

- HS2 East Midlands Hub Station;
- HS2 Chesterfield Station:
- Midlands Rail Hub;
- Newark Flat Crossing → Enhance Newark and Lincoln journey times to East/West Midlands

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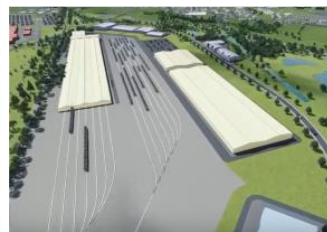UNITED KINGDOM · CHINA · MALAYSIA

78

HS2 has a potential to deliver an additional £ 4 billion a year[1] and 74,000 jobs[1] in the East Midlands area, with 20% of the estimated growth at the Innovation Campus and 80% in the wider region

East Midlands Hub Station:
Development Framework

Chesterfield Station (R)
and Staveley Depot (L)

Potential projects associated with HS2 East Midlands Hub Station:

- Commercial and Housing Development
    - Innovation Campus at Toton
- Conventional Rail:
    - Mansfield/Ashfield Conventional Rail:
    - Derby to Nottingham through EM Hub:
- Mass Transit options:
    - West of Nottingham to EM Hub – Tram extension:
    - Derby/Derbyshire to Hub via Pride Park:
    - EM Hub to East Midlands Airport.

HS2 Chesterfield Station and Depot:

- North Derbyshire Growth Zone: potential to generate thousands of new engineering jobs and be the heart of a mixed-use housing and employment zone
- Staveley Depot: Potential to become a rail industry 'centre of excellence'. Investing in the recover of a brownfield site can energise landowners to put forward a new garden village.
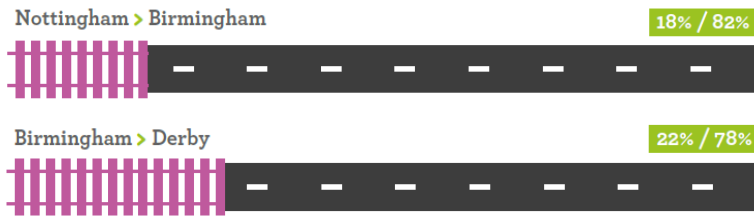
Railway regional connectivity experience for D2N2 population is slow and crowded, with forecasts predicting this condition to worsen in the future. Investment in increasing trains availability and faster services would directly benefit users in professional and logistic services

Midlands Rail Hub routes

Nottingham > Birmingham — 18% / 82%

Birmingham > Derby — 22% / 78%

Other inter-city routes

Manchester > Sheffield — 50% / 50%

Newcastle > Manchester — 46% / 54%

Liverpool > York — 51% / 49%
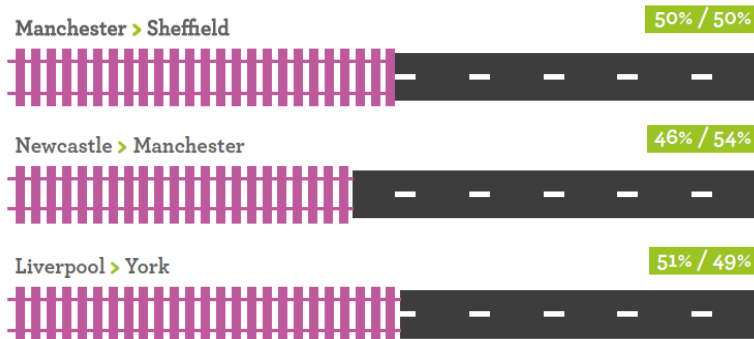
- The Rail Hub is needed to support high levels of growth in business and professional services over forthcoming years in key centres.
- Linking professional services sector between D2N2 and Midlands Hubs will expand access to market and supply chains. This sector makes up to more than a quarter of jobs in cities like Nottingham and Birmingham but have lower than average economic productivity. Professional services take advantage of good connections to trade domestically and internationally. Also, clustering enables better flow of information between firms, enhancing business efficiency.
- Additional benefits: Improved air quality due to a more balanced mode of travel between car and train. Also, increase in freight transport by rail will reduce the carbon footprint by 76 per cent.

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A total of £3.5 billion in expected to be spent on local roads between 2020-2025. DfT consultations with sub-national transport bodies and local authorities will create a middle-tier of the country's busiest 'A' Roads, know as Major Road Network and a pipeline of projects

Legend

Transport

★ Staveley Depot
★ Chesterfield Station
···· HS2_Alignment
★ HS2 Hub

Strategic Road Network

— A-Road
— A(M)-Road
— Motorway

— MRN
☐ D2N2 Boundaries

Minimum journey to job centre (min)

☐ 0 - 20
☐ 20 - 40
☐ 40 - 60
☐ 60 - 80
☐ 80 - 100
☐ 100 - 120

Local Roads, including the newly proposed Major Road Network carries two thirds of all traffic and a third of the freight.

Investment in these roads is essential to reduce congestion, support economic growth and housing delivery, as well as support Strategic Road Network which provides alternative routes to an ever growing traffic demand.
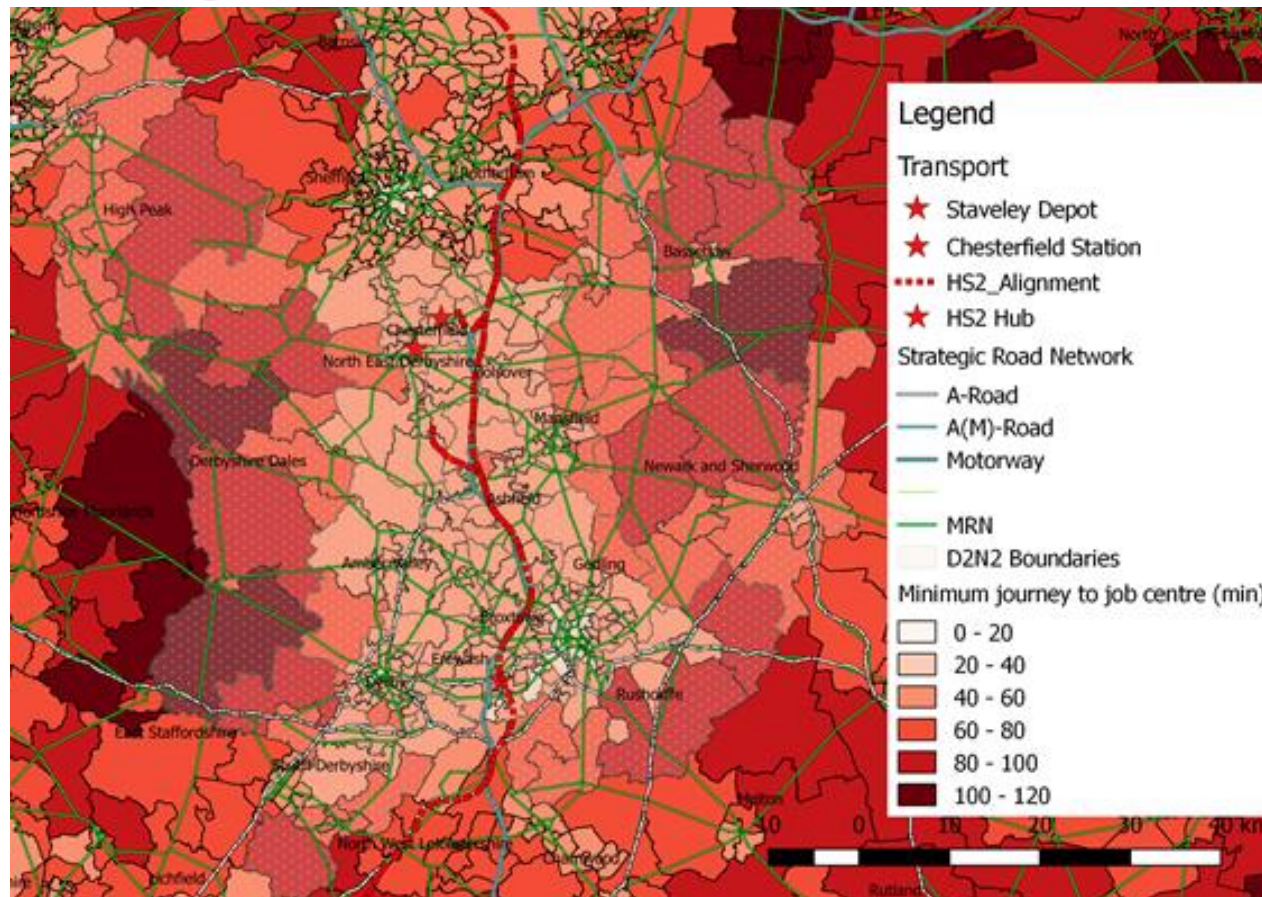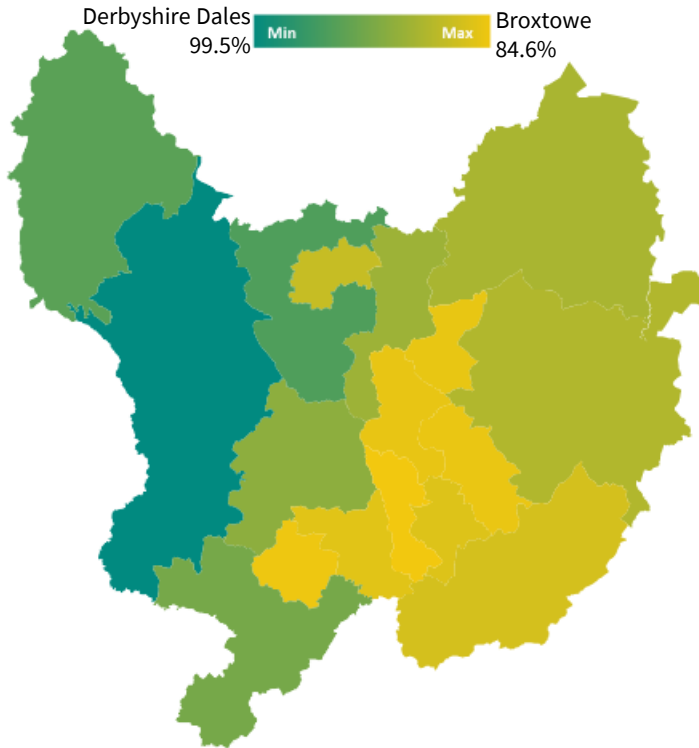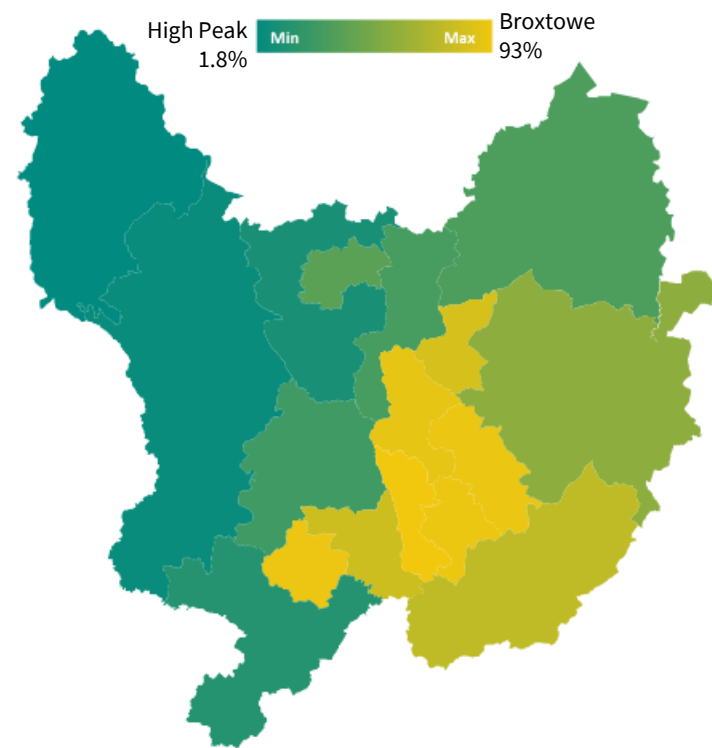
Source: Department for Transport;

96% of premises in D2N2 are covered with **superfast broadband.**
Ultrafast and fibre coverage needs improvement, especially in rural areas.

**Percentage of premises with Superfast Broadband (30+ Mbit/s) availability**

Derbyshire Dales
99.5%

Min — Max

Broxtowe
84.6%

Percentage of premises with Ultrafast Broadband (300+ Mbit/s) availability

High Peak
1.8%

Min — Max

Broxtowe
93%

Source: Ofcom, 2019
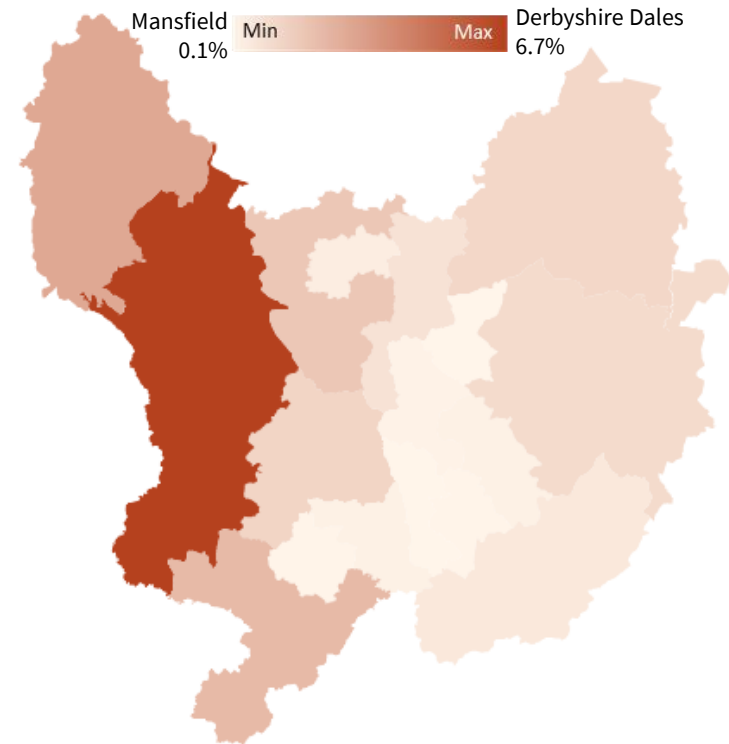
Infrastructure:
Digital

3% of premises are still unable to access a fixed broadband service that delivers a decent broadband connection

Percentage of premises unable to receive 30Mbit/sec

Broxtowe 0.4% — Min — Max — Derbyshire Dales 8%
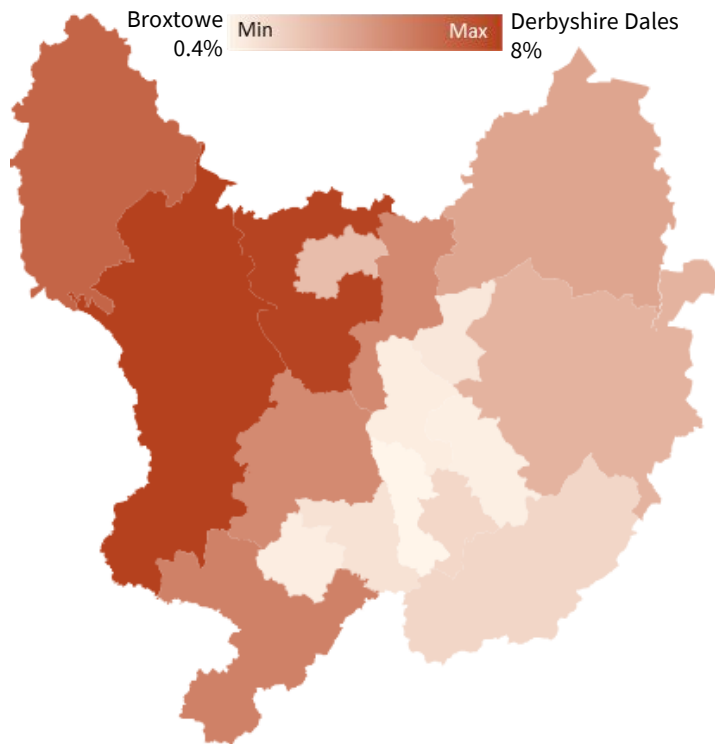
Percentage of premises below Universal Service Obligation (10Mbit/s)

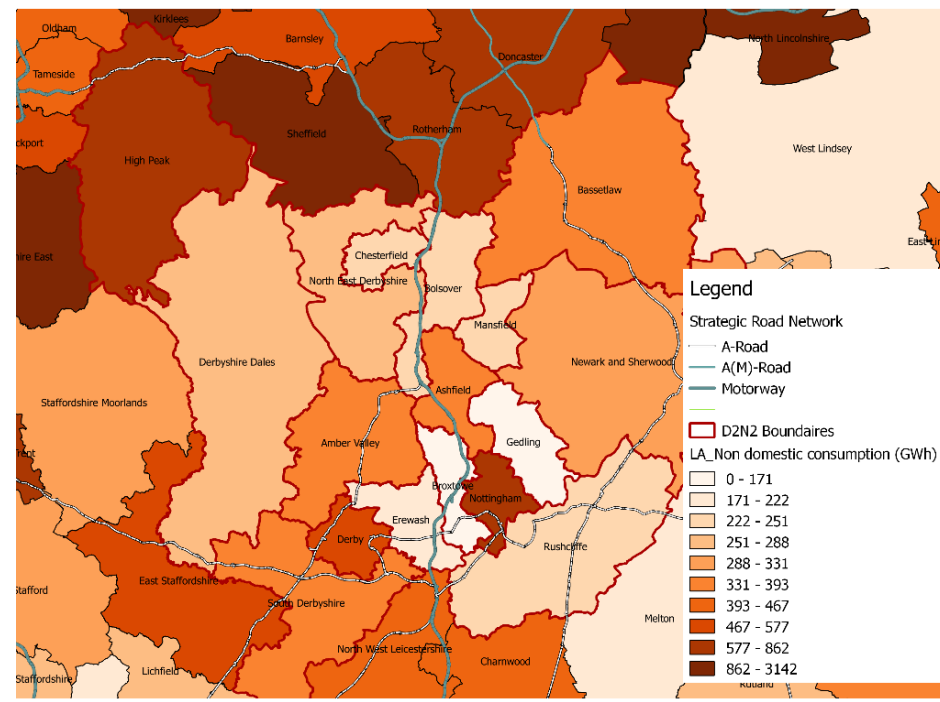Mansfield 0.1% — Min — Max — Derbyshire Dales 6.7%

Source: Ofcom 2019

Both **domestic and non-domestic electricity consumption make up 3.3%** of GB. Consumption distribution within D2N2 reflects residential and industrial densities.

Domestic electricity consumption
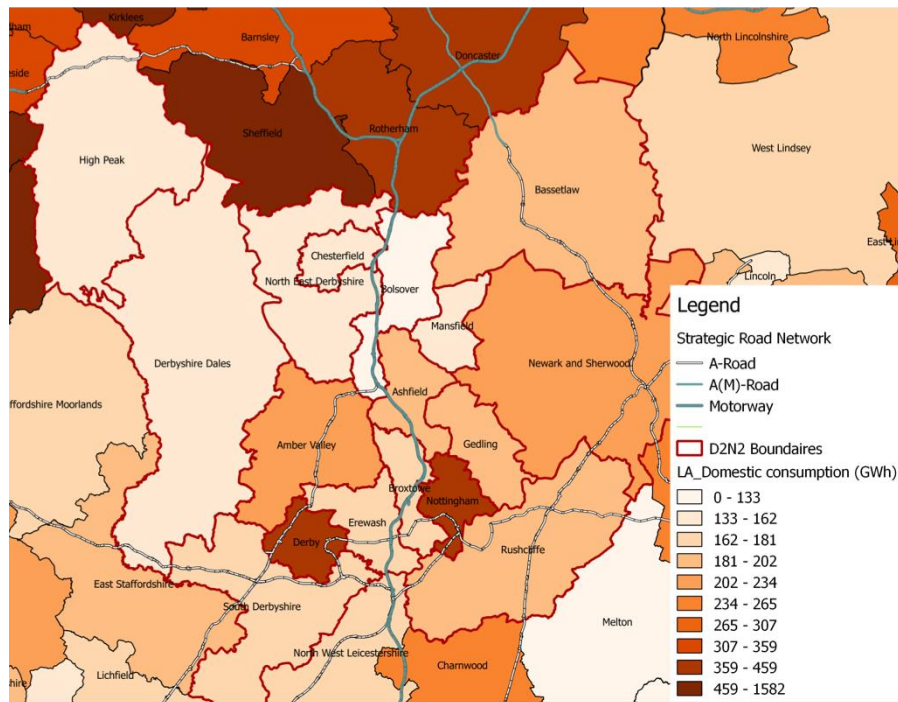
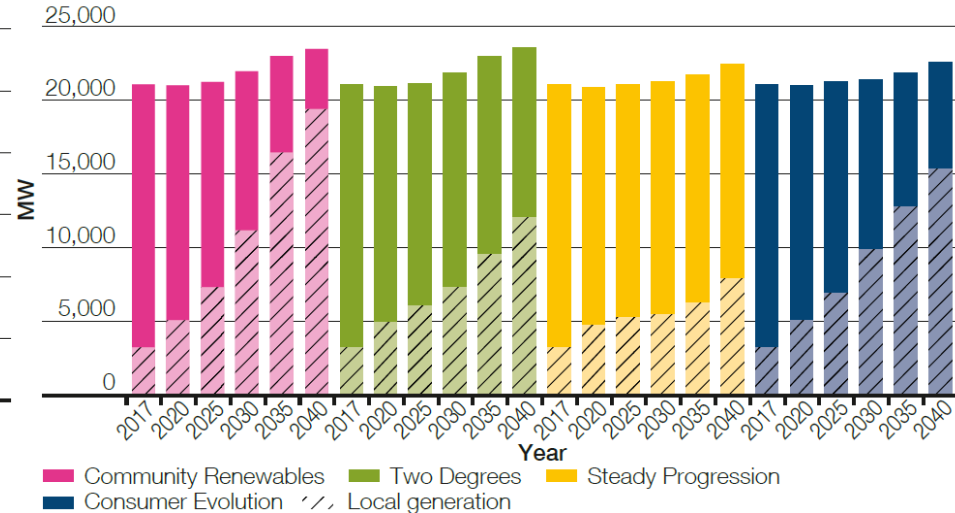## Non-domestic electricity consumption

A recent study by National Grid give more precise figures of the region's electricity forecasts, including the shut down of the three coal energy plants in Nottinghamshire, responsible alone for 6 GW power.

Generation capacity mix scenarios for Wales and the Midlands

Low Carbon & Renewable   IC & Storage   Fossil Fuel
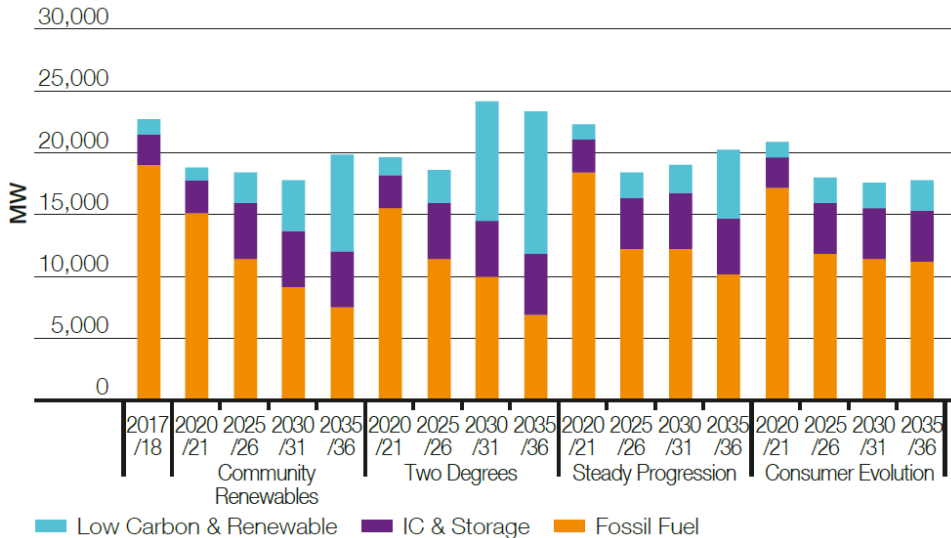
Gross demand scenarios for Wales and the Midlands

Community Renewables   Two Degrees   Steady Progression
Consumer Evolution   Local generation

Generation will grow with more investments in Distributed Generation and renewable sources - solar power and wind generation. However, the Midlands as a whole will depend on an excess of electricity production of less populated regions, such as East of England and Wales

Steady increase in the electricity demand will likely increase with Electric Vehicles and Heat Pumps

Source: WPD East Midlands, National Grid

A higher proportion of D2N2 dwelling stock is owned by Local Authorities (10.1%)

Dwelling stock – D2N2

60.76K

98.08K (6.25%)
(10.09%)

812.59K (83.62%)
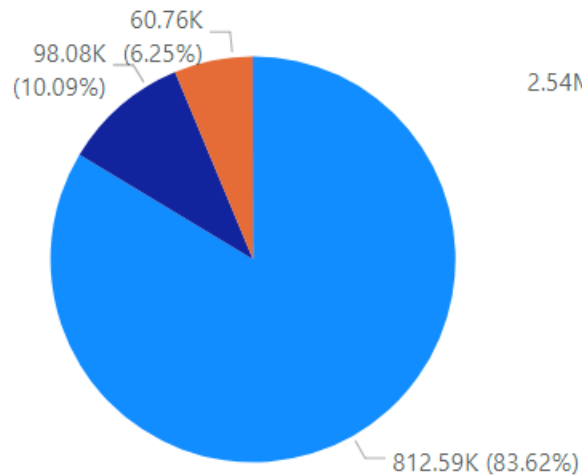
971,790

Dwelling Stock

Dwelling stock – England

1.59M (6.59%)

2.54M (10.5%)

20M (82.73%)
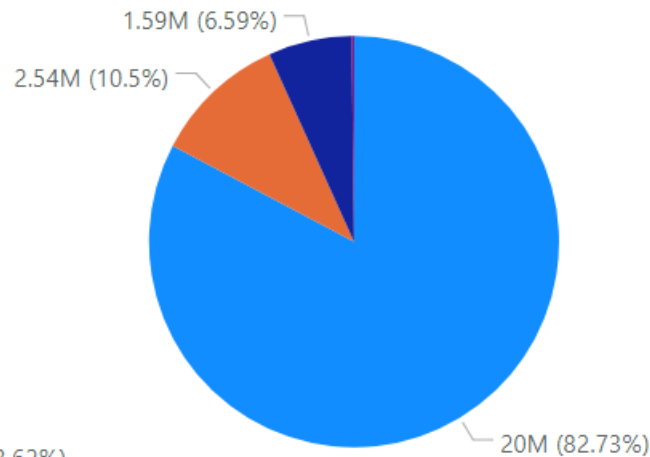
24.17M

Dwelling Stock

Owner
- Private sector (P)1
- Private Registered Provider
- Local Authority (incl. owned ...
- Other public sector

Home ownership is slightly higher in D2N2 (78.5%) than nationally (76.9%)

Dwelling Stock By Tenure

172.8K (21.5%)

631.7K (78.5%)

Tenure
- Owner Occupied
- Privately Rented

Owner occupied(%) by LAD

Nottingham
64.4%

Rushcliffe
87.6%

Source: ONS: Research outputs: Subnational dwelling stock by tenure estimates, England, 2012 to 2017
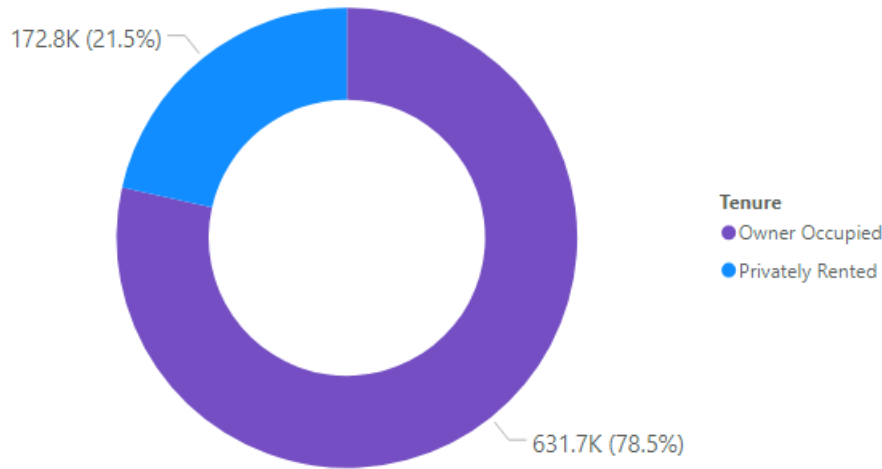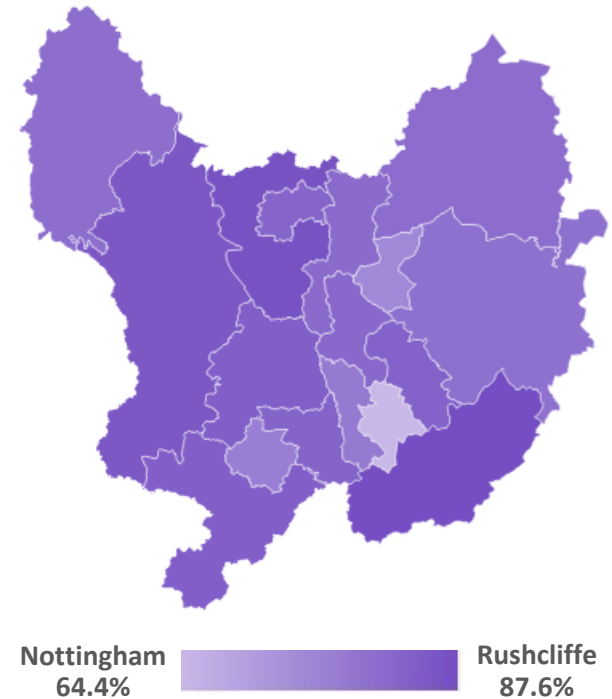
Recent growth in dwelling stock is lower than nationally in most of the D2N2 local authorities.

Dwelling Stock growth (%): Bottom 12

Chesterfield
1.3%

South
Derbyshire
6.6%

LEP
- Black Country
- Cumbria
- **D2N2**
- Dorset
- Greater Birmingham and Solihull
- Greater Lincolnshire
- Greater Manchester
- Humber
- Lancashire
- Leeds City Region
- Liverpool City Region
- Stoke-on-Trent and Staffordshire

Source: MHCLG: Table 255: permanent dwellings started and completed, by tenure and local enterprise partnership
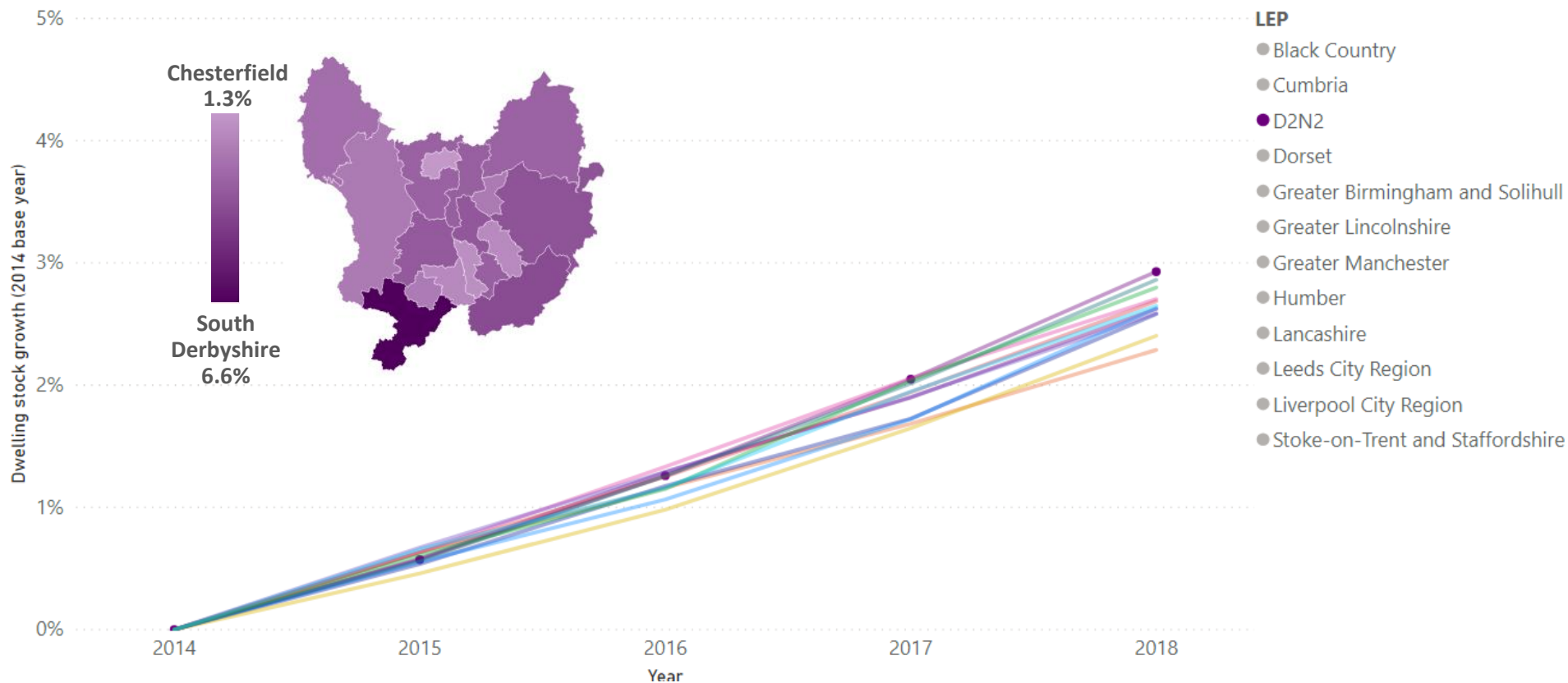
However, D2N2 has reduced its vacant dwelling stock by 24.3% over the last 10 years

Dwelling Vacant Stock change (%): Top 10

LEP
- Black Country
- D2N2
- Greater Birmingham and Solihull
- Greater Manchester
- Humber
- Leeds City Region
- Liverpool City Region
- London
- New Anglia
- Sheffield City Region
- West of England

-24.3%
D2N2 Vacant stock change (2008-2018)

-23.4%
Average vacant stock change (2008-2018)

Source: MHCLG: LT_615: vacant dwellings by local authority district: England, from 2004
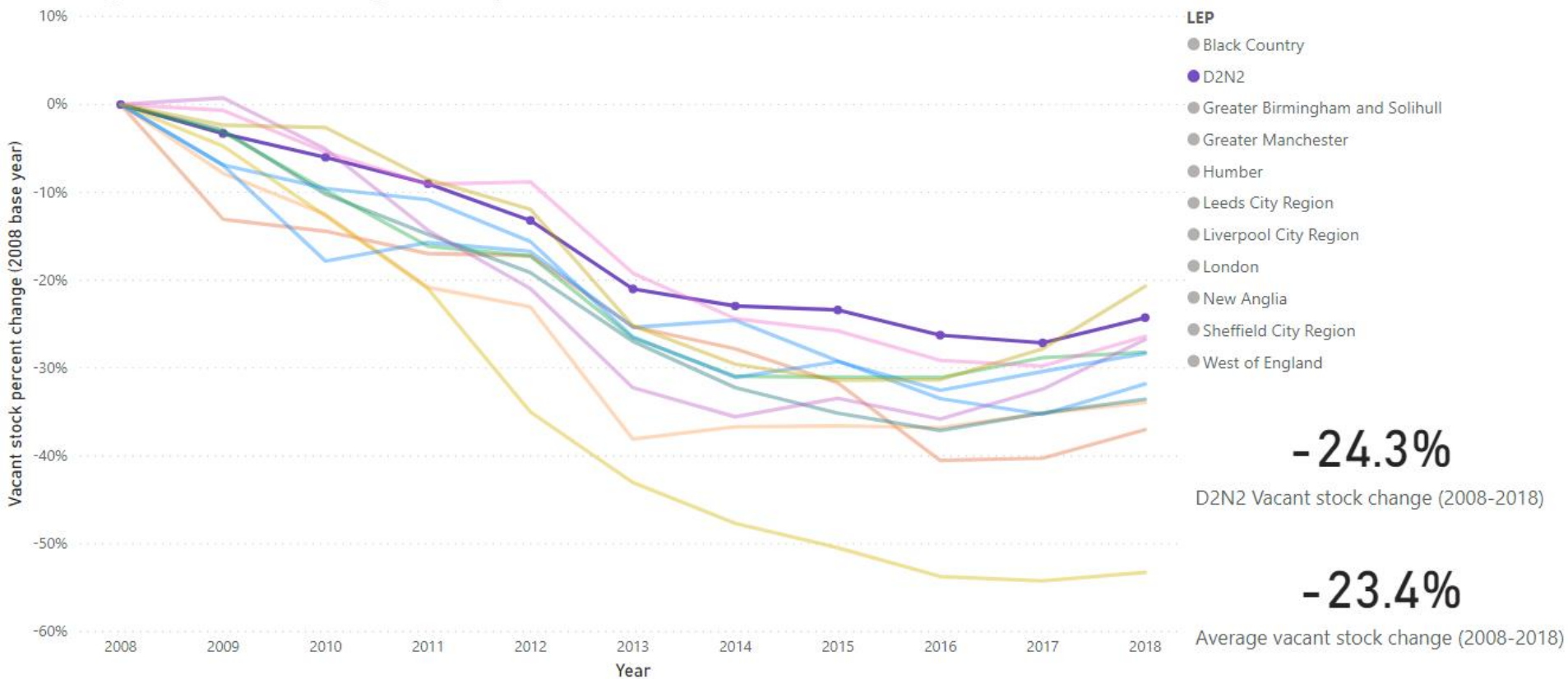
Even though D2N2 average affordability ratio is below the national average, it has been growing across D2N2.

Affordability Ratio by Local Authority

Year ● 2014 ● 2015 ● 2016 ● 2017 ● 2018 ● Average affordability ratio in 2018
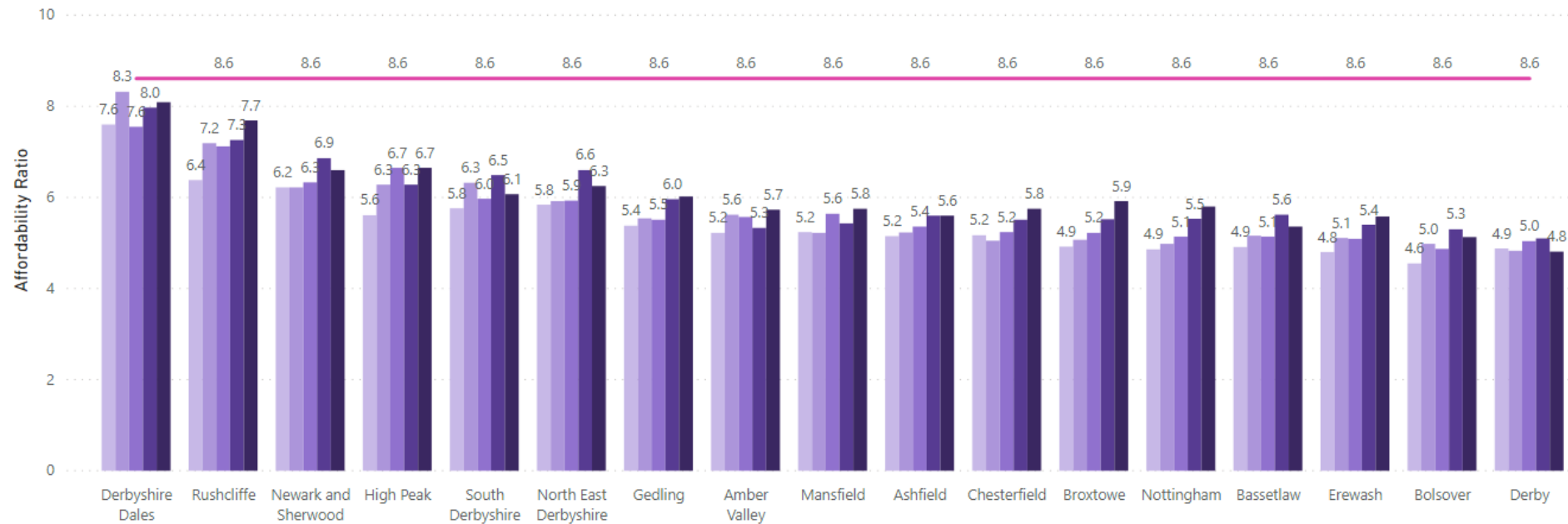
Note: Affordability ratio is house price divided by median earnings ONS Source: ONS: Housing affordability in England and Wales: Ratio of house price to residence-based earnings (lower quartile and median), 2002 to 2018

Business Environment

- Business stock and density
- Scale-ups
- Foreign Direct Investment
- Imports of goods
- Exports of goods and services
- EU/non-EU imports and exports
- Business survey (sales, recruiting, investment plans, concerns, premises)
- Brexit impact and business perceptions

Derby
Derbyshire
Nottingham
Nottinghamshire

D2N2 has second largest business stock among Midlands Engine LEPs

Size distribution

78,500
Businesses

Medium-sized (50-249) 2%
Large (250+) 0.4%
Small (10-49) 10%
Micro (0-9) 88%
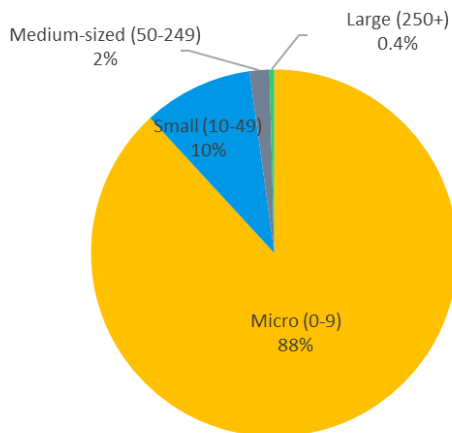
Business Stock in Midlands Engine LEPs

Greater Birmingham...	D2N2	Leicester and Leicestershire	Coventry and Warwickshire	Stoke-on-Trent and Staffo...	Black Country	Greater Lincolnshire	Worcestershire	The Marches
86.0K	78.5K	45.3K	40.6K	40.1K	38.5K	37.8K	30.8K	27.5K

Business Stock

Bolsover 2,490   Min   Max   Nottingham 10,380
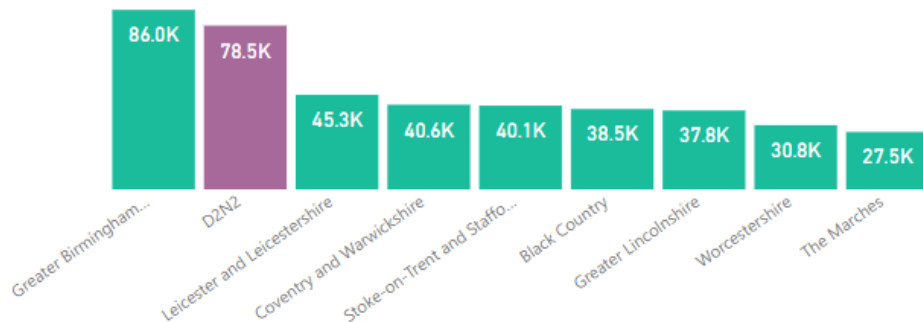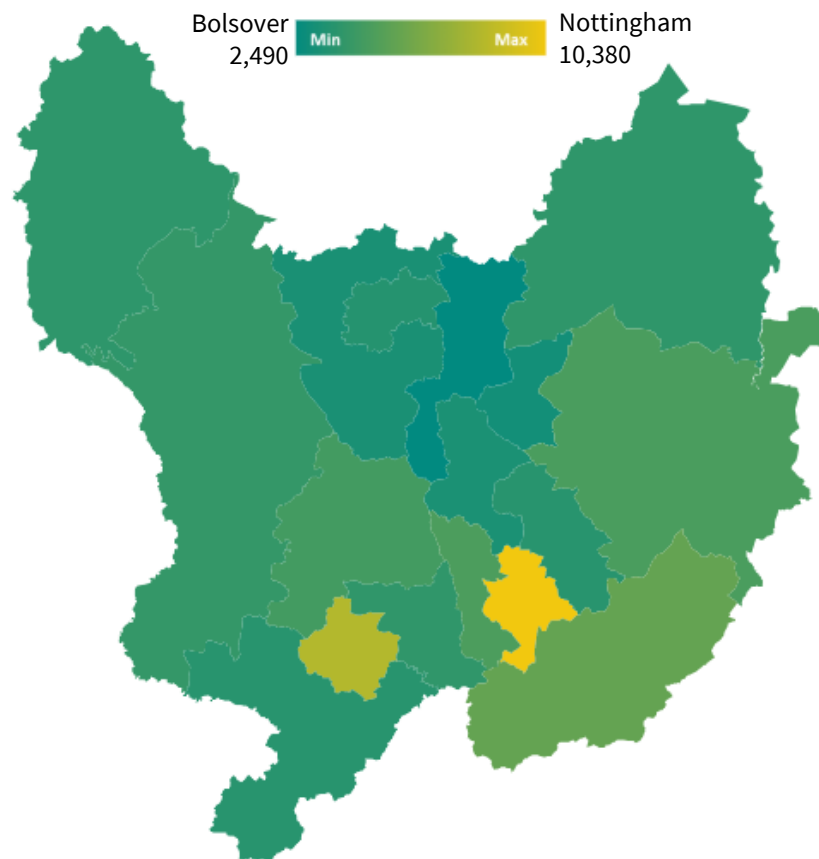
Business Environment: Business Density

D2N2 overall **business density is 19.4% lower** than average, while density in Derbyshire Dales, Rushcliffe and Broxtowe is above the UK average.

Business Density

Ashfield 264 | Min — Max | Derbyshire Dales 577

Business Density in Midlands Engine LEPs

LEP	Value
Worcestershire	523
UK	443
Coventry and Warwickshire	439
Leicester and Leicestershire	434
Greater Birmingham and Solihull	423
The Marches	401
Midlands Engine	385
D2N2	357
Stoke-on-Trent and Staffordshire	356
Greater Lincolnshire	349
Black Country	325
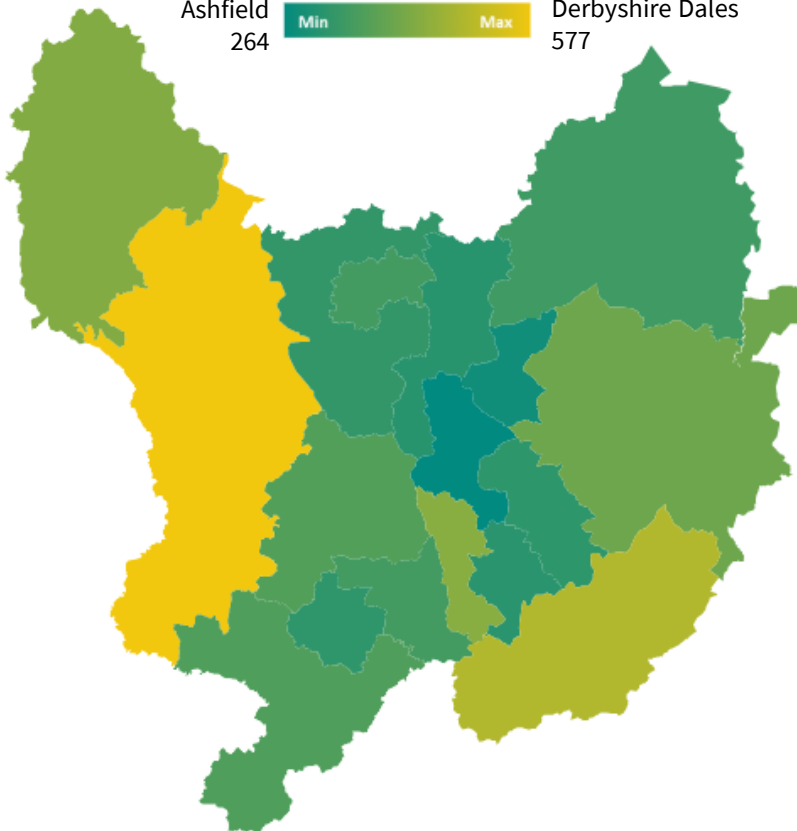
Business births are lower in D2N2 than nationally

Business Births in Midlands Engine LEPs

LEP	Business Births
Worcestershire	104
Greater Birmingham and Solihull	71
UK	61
Leicester and Leicestershire	54
Coventry and Warwickshire	50
Midlands Engine	48
Black Country	44
D2N2	41
The Marches	39
Stoke-on-Trent and Staffordshire	38
Greater Lincolnshire	36
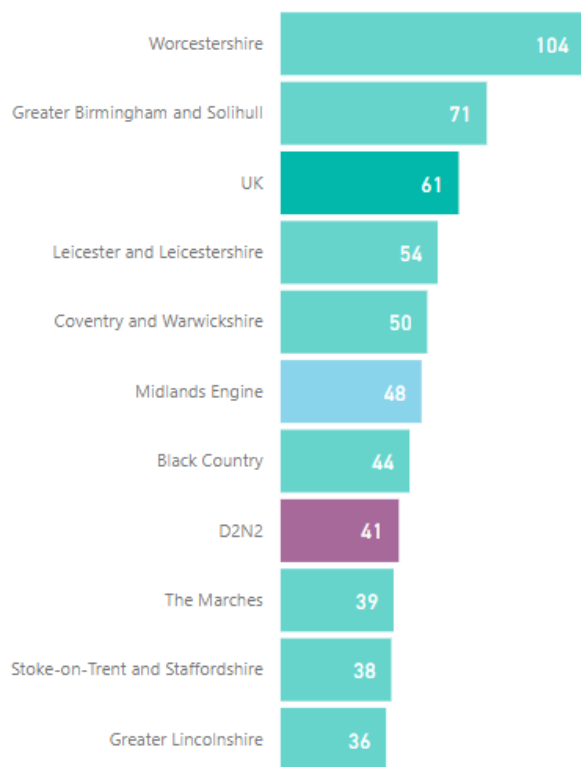
Business Births (per 10,000 residents)

Bolsover 30 Min — Max Rushcliffe 57
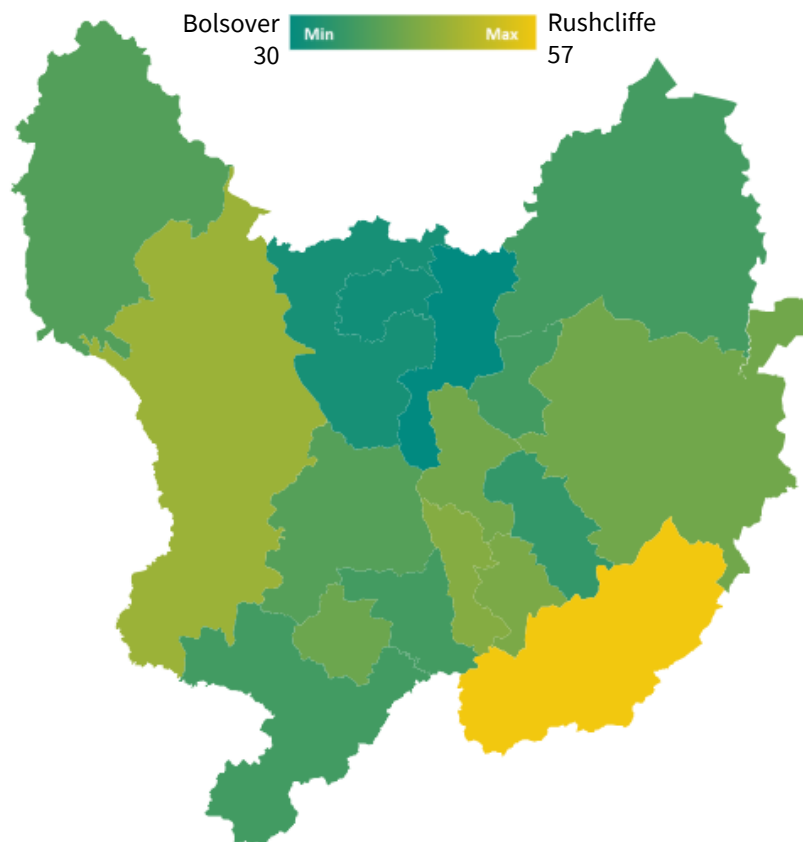
Source: D2N2 analysis of ONS Business Demography data (2017) compiled by the Midlands Engine Observatory

D2N2 is home to 1.8% of UK scale-ups.
However, equity investment in scale-ups has been declining in East Midlands in terms of both number and size of deals.

201
Scale-Ups

£7bn
Combined Turnover

87K
Combined number of employees
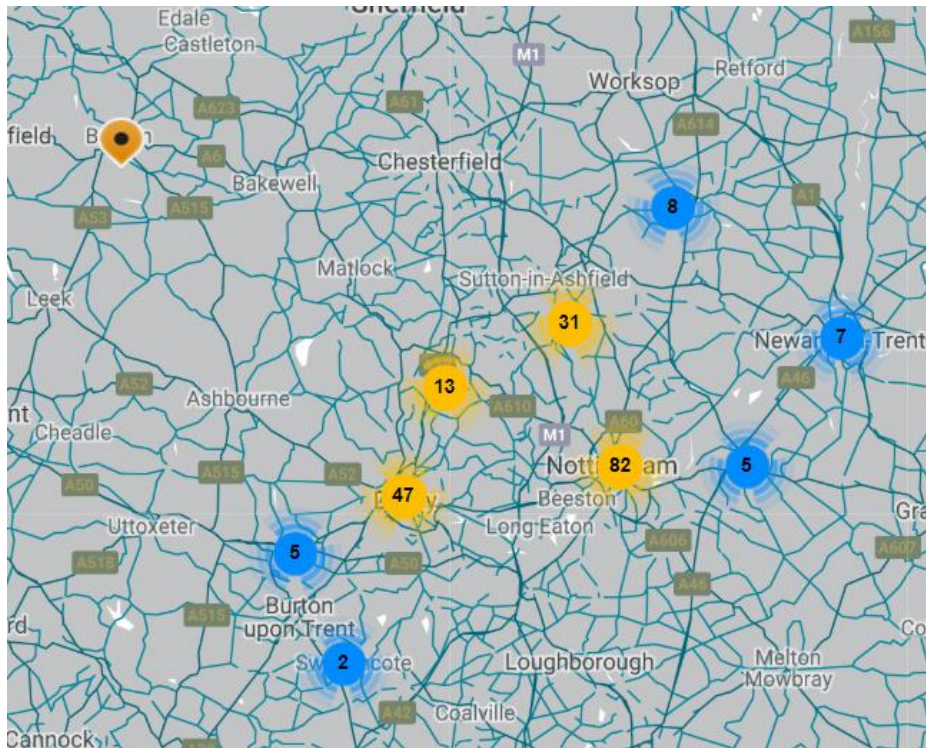
EQUITY INVESTMENT INTO VISIBLE SCALEUPS OVER TIME

	2011	2012	2013	2014	2015	2016	2017
	£912m	£755m	£639m	£1,256m	£867m	£879m	£2,747m
Deal numbers	72	86	77	89	72	55	66
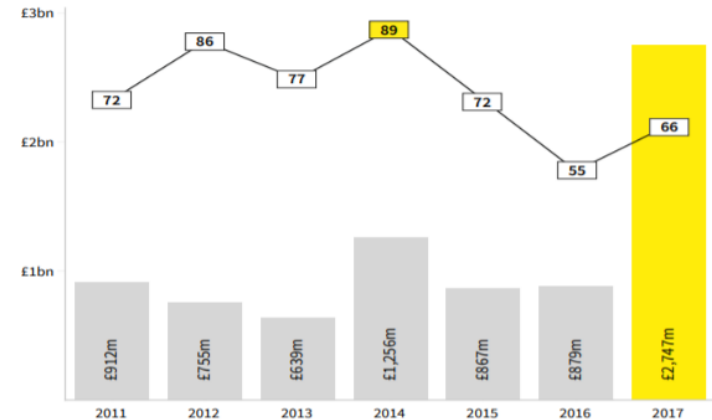
ANNOUNCED EQUITY INVESTMENTS IN SCALEUPS IN THE MIDLANDS 1/1/11 – 31/8/18

— Deal numbers
▢ Amount invested

	2011	2012	2013	2014	2015	2016	2017	2018
Amount invested	£44M	£59M	£98M	£94M	£63M	£35M	£37M	£3M
Deal numbers	10	17	15	15	20	15	10	2
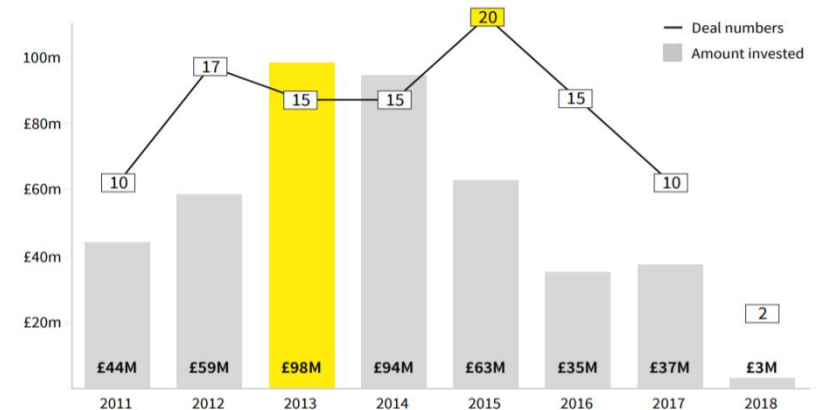
Business
Environment
Scale-ups

ERC research suggests that D2N2 has a lower percentage of scaling start-ups.
There were 2,595 firms in D2N2 which both created jobs and increased productivity between 2015 and 2018

Start-ups Scaling <£500k to £1m + in 3 years 2015-18 (%)
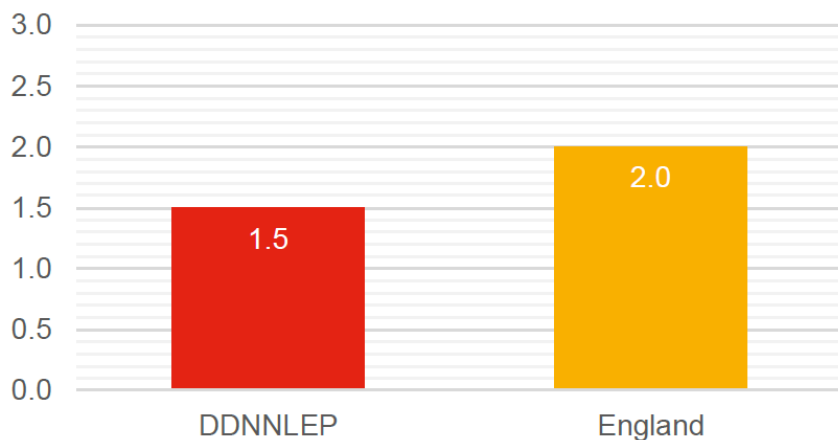
High Growth Firm (OECD definition) Incidence Rate 2010/13 – 2015/18 (%)
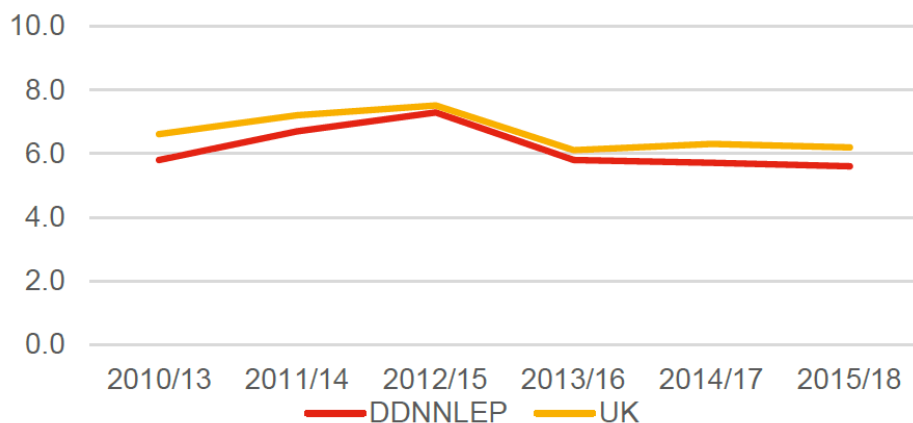
69 FDI projects **created 1,823 new jobs in the East Midlands** in 2018-19. **38% of projects and 45% of new jobs came from the EU***

Foreign Direct Investment Projects and New Jobs (2018-19)

● New Jobs ● Projects

Region	New Jobs	Projects
London	14.9K	627
Multiple UK sites	12.3K	52
West Midlands	5.0K	155
North West	4.7K	142
South East	3.9K	202
Scotland	3.3K	126
Wales	2.3K	51
Yorkshire and The Humber	2.2K	98
North East	2.2K	59
South West	1.9K	79
East Midlands	1.8K	69
East of England	1.5K	87
Northern Ireland	1.5K	35
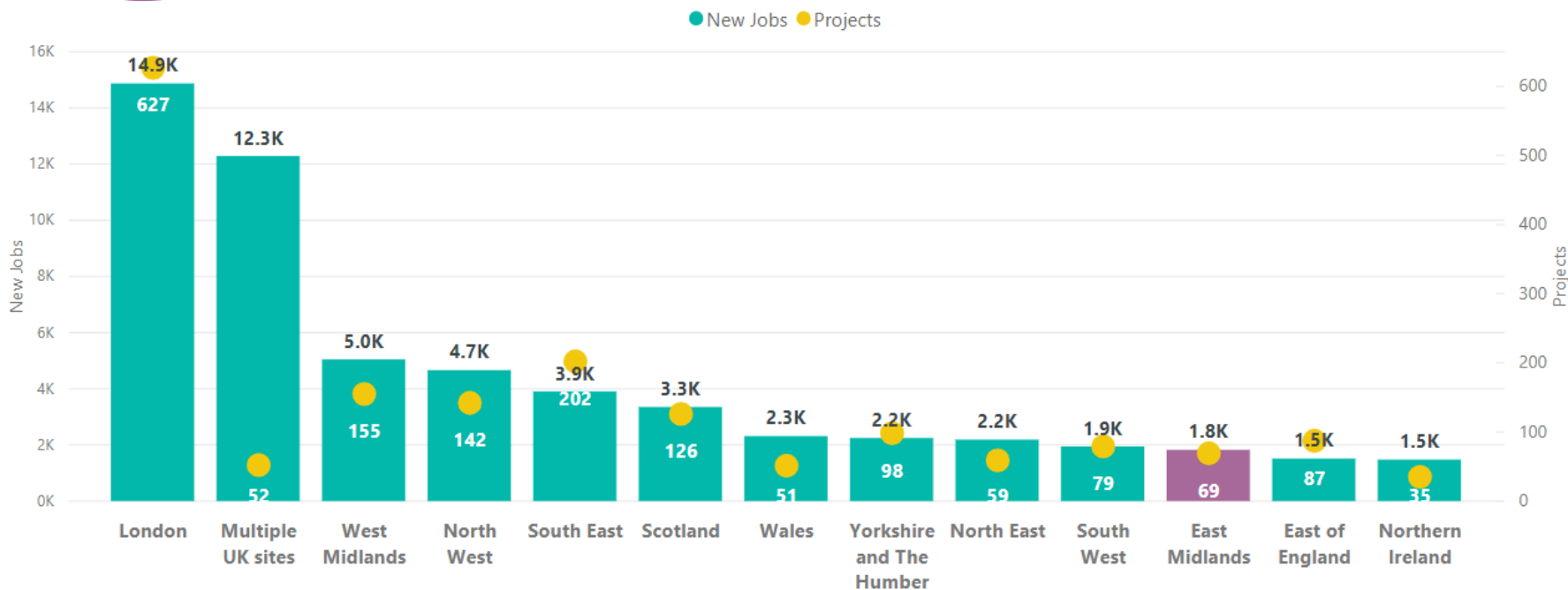
Trend in FDI New Jobs and Projects in the East Midlands

● New Jobs ● Projects

	2015-16	2016-17	2017-18	2018-19
New Jobs	3.68K	1.80K	3.71K	1.82K
Projects	85	74	72	69
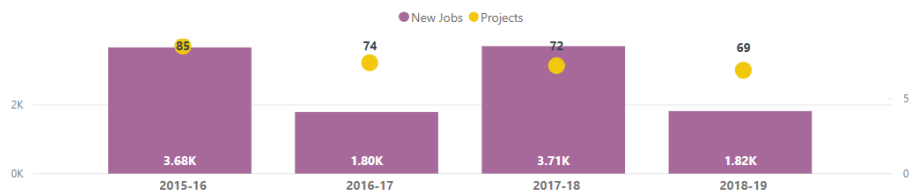
38%
% of FDI projects from the EU

45%
% of new jobs from EU FDI

D2N2 is the 8th largest importer of goods. There is a larger number of importers than exporters in D2N2.

£12.2bn
Value of imported goods

2.9%
of UK goods imports

15,985
Importing businesses

Top 10 areas by the total value of imports

● Value of imports ● Importing businesses

Area	Value	Importing businesses
Berkshire, Buckinghamshire and Oxfordshire	£38bn	27,066
Surrey, East and West Sussex	£23bn	24,981
Inner London - West	£22bn	30,304
Bedfordshire and Hertfordshire	£21bn	18,514
Hampshire and Isle of Wight	£19bn	18,237
West Midlands	£15bn	20,175
East Anglia	£13bn	21,266
Derbyshire and Nottinghamshire	£12bn	15,985
Herefordshire, Worcestershire and Warwickshire	£11bn	
Northern Ireland	£7bn	21,397

Imports of goods by category

£0.6bn (4.5%)
£0.9bn (7.5%)
£1.5bn (12.3%)
£1.9bn (15.9%)
£7.0bn (57.5%)

Category
● Machinery & transport equipment
● Miscellaneous manufactured articles
● Manufactured goods classified chiefly by material
● Chemicals & related products
● Food & live animals
● Crude materials, inedible, except fuels
● Beverages & tobacco
● Mineral fuels, lubricants & related materials
● Animal & vegetable oils, fats & waxes
● Tansactions not classified elsewhere

Source: HMRC, Regional trade in goods statistics, 2017 and ONS, Services exports – experimental statistics, 2016. Both reported for NUTS2 geographies.

D2N2 specialises in goods exports, which make up 4.1% of the UK total.
Goods are exported by a comparatively small number of businesses.

4%
of UK goods exports

12,582
Exporting businesses

Exports of goods and services in D2N2

Services £2.6bn (17%)

£14.8bn
Total exports

Goods
£12.3bn (83%)

1%
of GB services exports

Top 10 areas by the amount of machinery & transport equipment exports
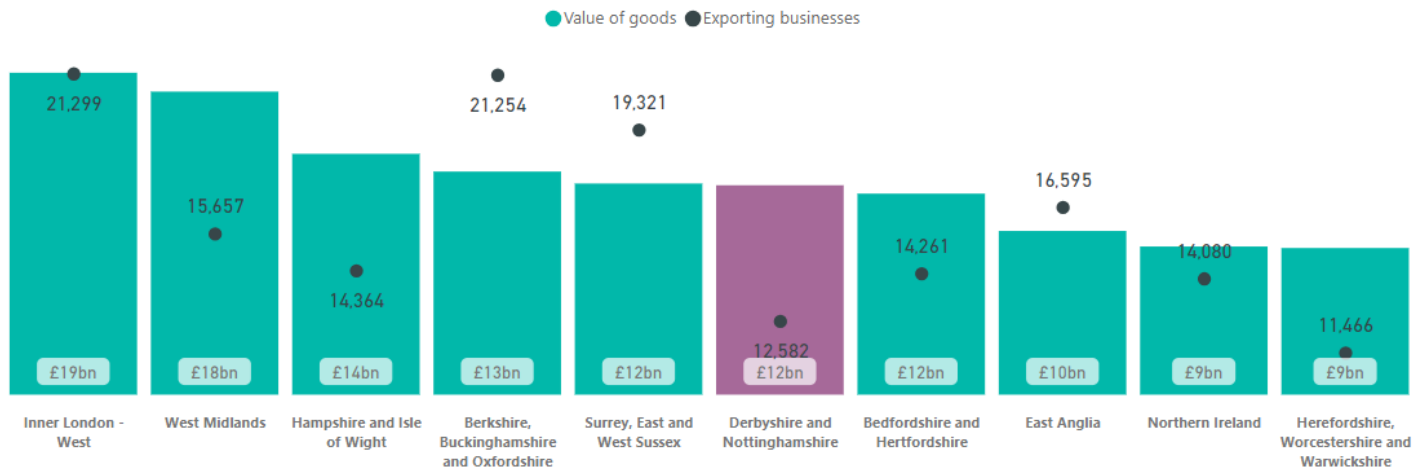
● Value of goods ● Exporting businesses

Area	Value	Exporting businesses
Inner London - West	£19bn	21,299
West Midlands	£18bn	15,657
Hampshire and Isle of Wight	£14bn	14,364
Berkshire, Buckinghamshire and Oxfordshire	£13bn	21,254
Surrey, East and West Sussex	£12bn	19,321
Derbyshire and Nottinghamshire	£12bn	12,582
Bedfordshire and Hertfordshire	£12bn	14,261
East Anglia	£10bn	16,595
Northern Ireland	£9bn	14,080
Herefordshire, Worcestershire and Warwickshire	£9bn	11,466

Source: HMRC, Regional trade in goods statistics, 2017 and ONS, Services exports – experimental statistics, 2016. Both reported for NUTS2 geographies.

Exports of machinery and transport equipment products make up 70.5% of D2N2 goods exports compared to 40% nationally.
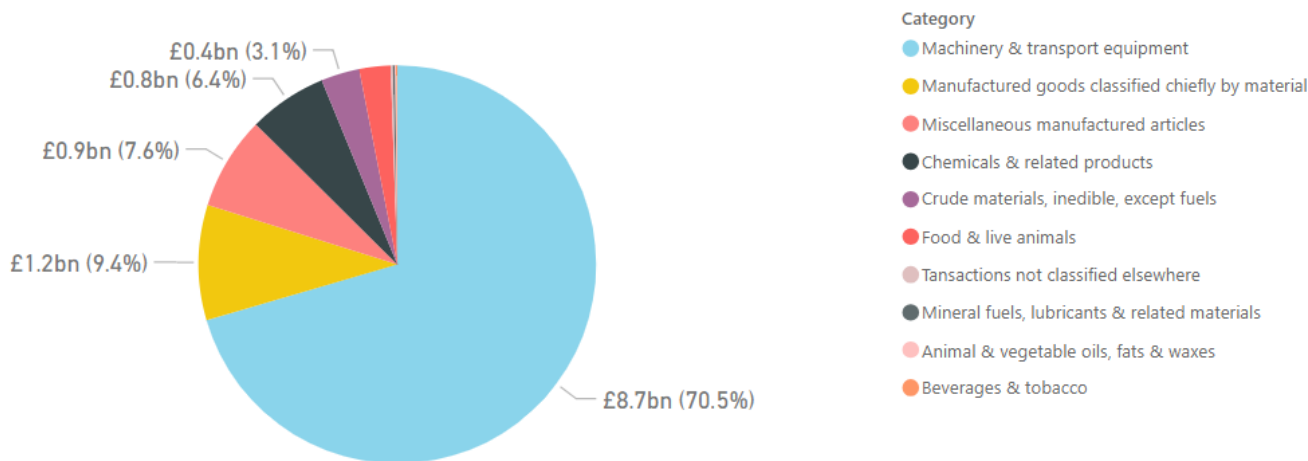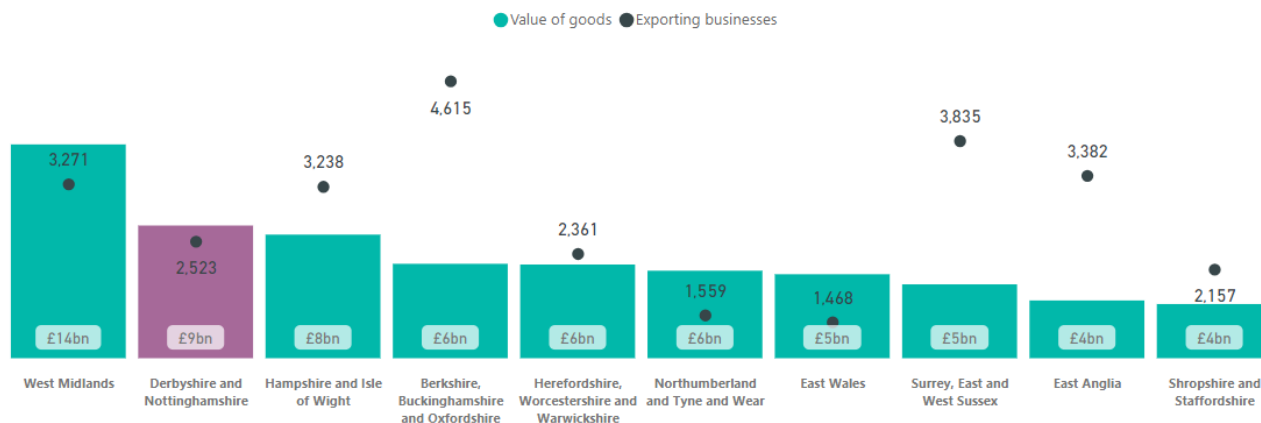# This category is second largest among other areas.
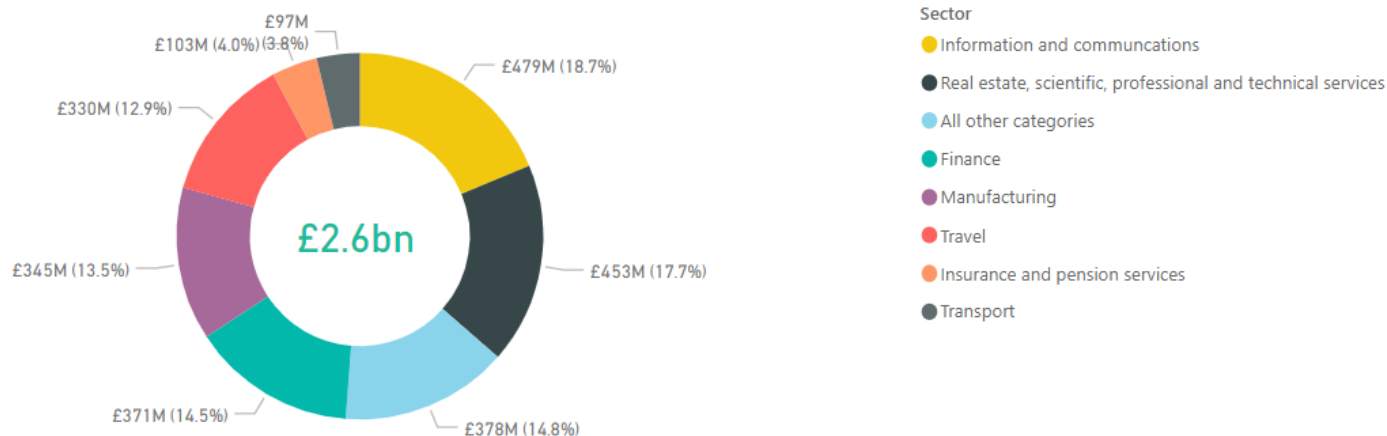
Exports of goods by category

£0.4bn (3.1%)
£0.8bn (6.4%)
£0.9bn (7.6%)
£1.2bn (9.4%)
£8.7bn (70.5%)

Category
- Machinery & transport equipment
- Manufactured goods classified chiefly by material
- Miscellaneous manufactured articles
- Chemicals & related products
- Crude materials, inedible, except fuels
- Food & live animals
- Tansactions not classified elsewhere
- Mineral fuels, lubricants & related materials
- Animal & vegetable oils, fats & waxes
- Beverages & tobacco

Top 10 areas by the amount of machinery & transport equipment exports

● Value of goods ● Exporting businesses

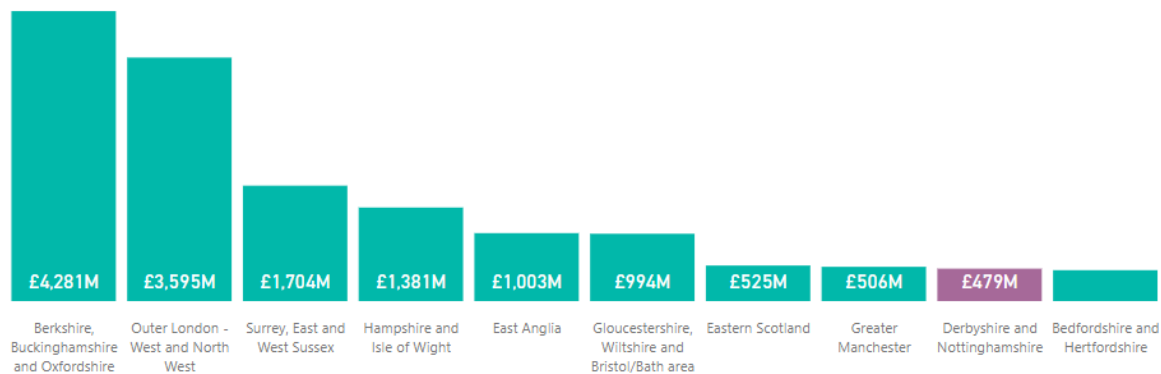| Area	Value	Exporting businesses
West Midlands	£14bn	3,271
Derbyshire and Nottinghamshire	£9bn	2,523
Hampshire and Isle of Wight	£8bn	3,238
Berkshire, Buckinghamshire and Oxfordshire	£6bn	4,615
Herefordshire, Worcestershire and Warwickshire	£6bn	2,361
Northumberland and Tyne and Wear	£6bn	1,559
East Wales	£5bn	1,468
Surrey, East and West Sussex	£5bn	3,835
East Anglia	£4bn	3,382
Shropshire and Staffordshire	£4bn	2,157

Source: HMRC, Regional trade in goods statistics, 2017, reported for NUTS2 geographies

Exports of Information and Communication services are in the top 10 areas

Services exports by sector

£97M (3.8%)
£103M (4.0%)
£330M (12.9%)
£479M (18.7%)
£345M (13.5%)
£453M (17.7%)
£371M (14.5%)
£378M (14.8%)

£2.6bn

Sector
- Information and communcations
- Real estate, scientific, professional and technical services
- All other categories
- Finance
- Manufacturing
- Travel
- Insurance and pension services
- Transport

Top 10 areas by the amount of information and communication services exports

£4,281M	£3,595M	£1,704M	£1,381M	£1,003M	£994M	£525M	£506M	£479M	
Berkshire, Buckinghamshire and Oxfordshire	Outer London - West and North West	Surrey, East and West Sussex	Hampshire and Isle of Wight	East Anglia	Gloucestershire, Wiltshire and Bristol/Bath area	Eastern Scotland	Greater Manchester	Derbyshire and Nottinghamshire	Bedfordshire and Hertfordshire

Source: ONS, Services exports – experimental statistics, 2016, reported for NUTS2 geographies

D2N2 businesses **export 50%** of all goods exports to the EU and **import 54%** of all imported goods from the EU.

Imports by destination (EU/non-EU)

Non-EU 46.2%

EU 53.8%
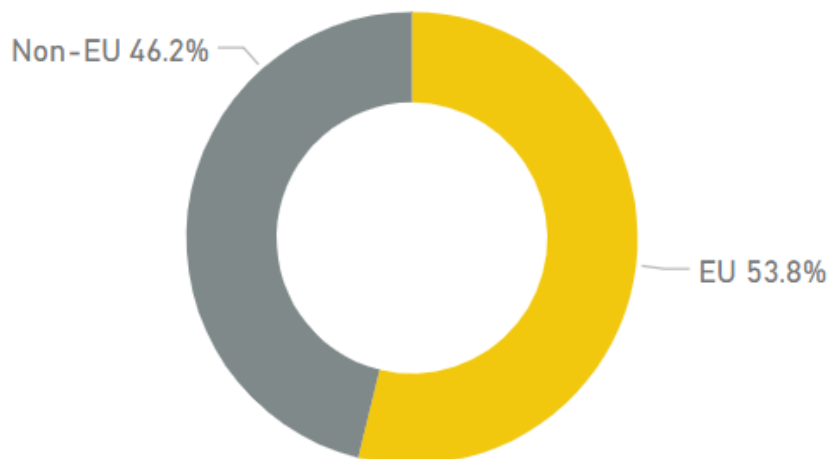
Exports by destination (EU/non-EU)
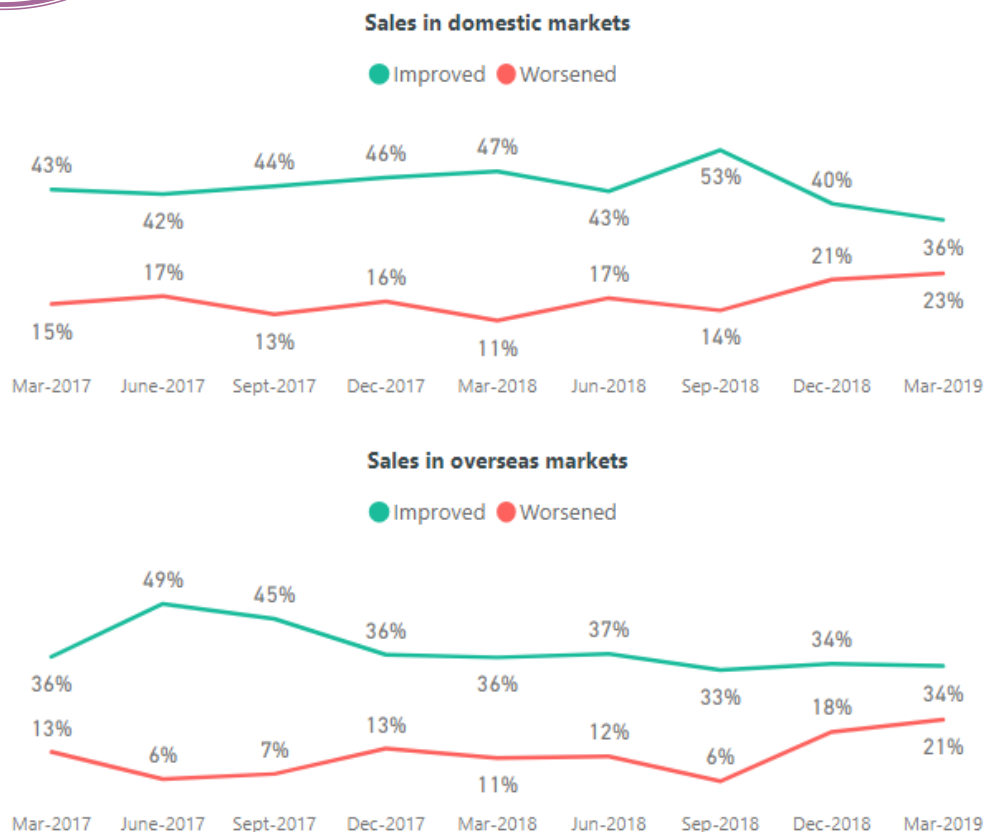
EU 49.7%

Non-EU 50.3%

While the overall proportion of the EU imports/exports is not significantly different from the UK averages, some goods categories have more significant exposure to the EU markets. For example, 68% miscellaneous manufactured articles, 60% of chemical products and 75% of food and drink products are exported to the EU, whereas 73% of chemical products, 84% of food and drink products are imported from the EU.

There is a steady decrease in business confidence in domestic an overseas markets.

Sales in domestic markets

● Improved ● Worsened

43%   44%   46%   47%   53%   40%
       42%   43%   36%
17%   16%   17%   21%   23%
15%   13%   11%   14%

Mar-2017 June-2017 Sept-2017 Dec-2017 Mar-2018 Jun-2018 Sep-2018 Dec-2018 Mar-2019

Sales in overseas markets

● Improved ● Worsened

       49%   45%   36%   37%   34%   34%
36%   36%   33%
13%   13%   12%   18%   21%
       6%   7%   11%   6%

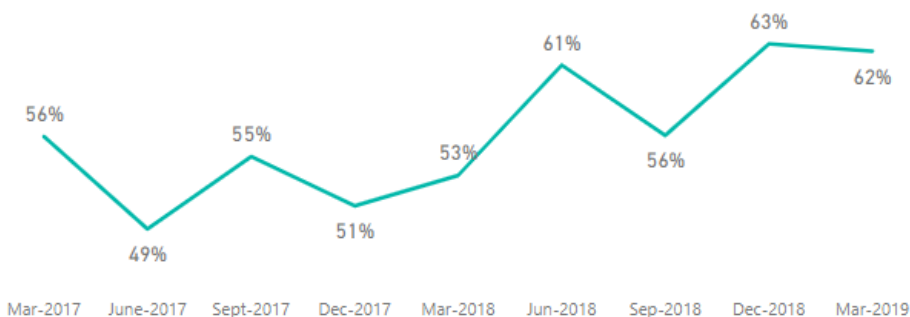Mar-2017 June-2017 Sept-2017 Dec-2017 Mar-2018 Jun-2018 Sep-2018 Dec-2018 Mar-2019

East Midlands Chamber reports that the slowdown in domestic market is evenly spread between manufacturing and service sectors. However, the manufacturing sector shows much stronger performance in overseas markets than services.
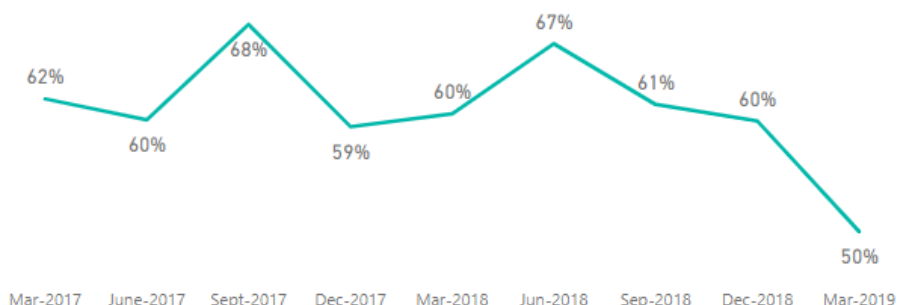
The fall in business confidence is also reflected in the **declining percentage of businesses which have attempted to recruit.**
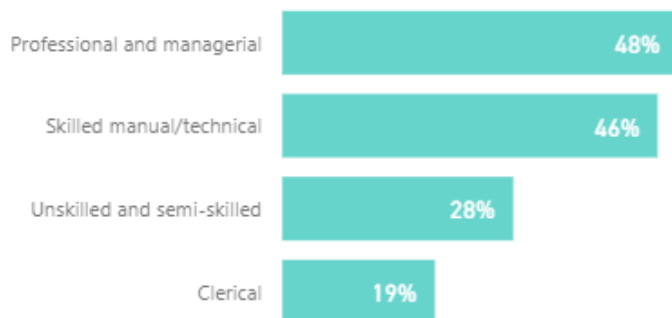
Difficulties in recruiting have been reported by:

Mar-2017: 56%, June-2017: 49%, Sept-2017: 55%, Dec-2017: 51%, Mar-2018: 53%, Jun-2018: 61%, Sep-2018: 56%, Dec-2018: 63%, Mar-2019: 62%

Percentage of businesses which have attempted to recruit:

Mar-2017: 62%, June-2017: 60%, Sept-2017: 68%, Dec-2017: 59%, Mar-2018: 60%, Jun-2018: 67%, Sep-2018: 61%, Dec-2018: 60%, Mar-2019: 50%

In the last 3 months businesses have had difficulty in recruiting:

|	
Professional and managerial	48%
Skilled manual/technical	46%
Unskilled and semi-skilled	28%
Clerical	19%

At the same time, difficulties in recruiting have been reported by businesses which have attempted to recruit. In particular, many respondents reported difficulties in staffing professional, managerial and skilled technical roles.

Declining confidence is also reflected in restrained intentions to invest in both fixed and human capital.
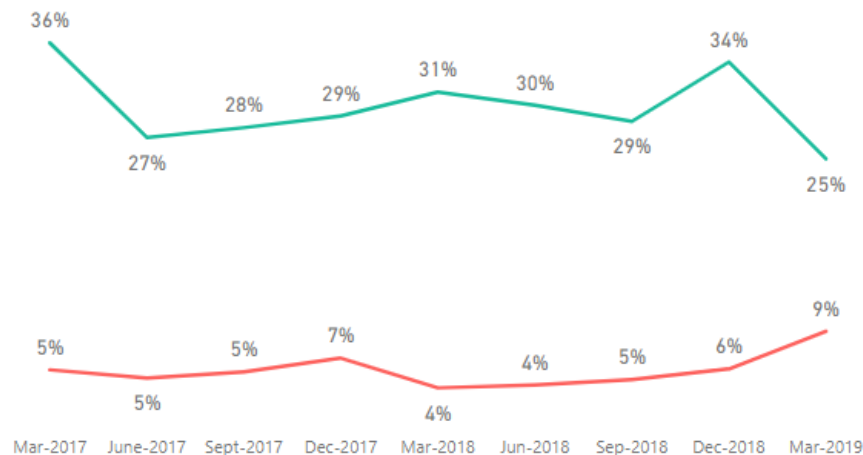
Plans for new plant/machinery/equipment have been:

● Revised downwards ● Revised upwards
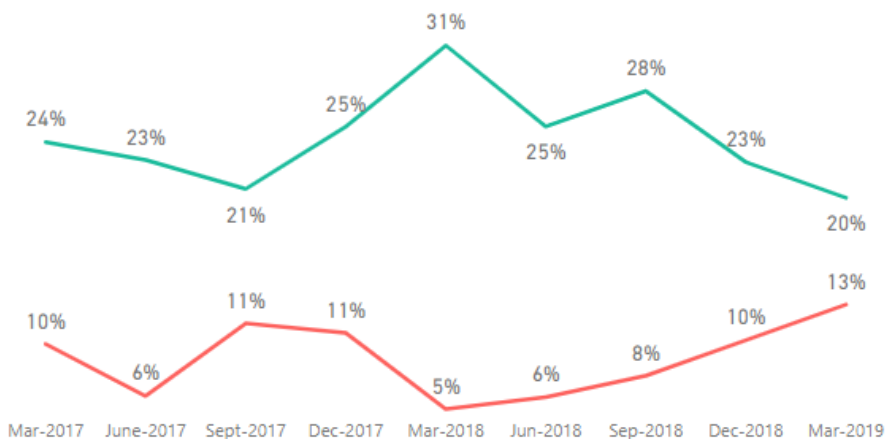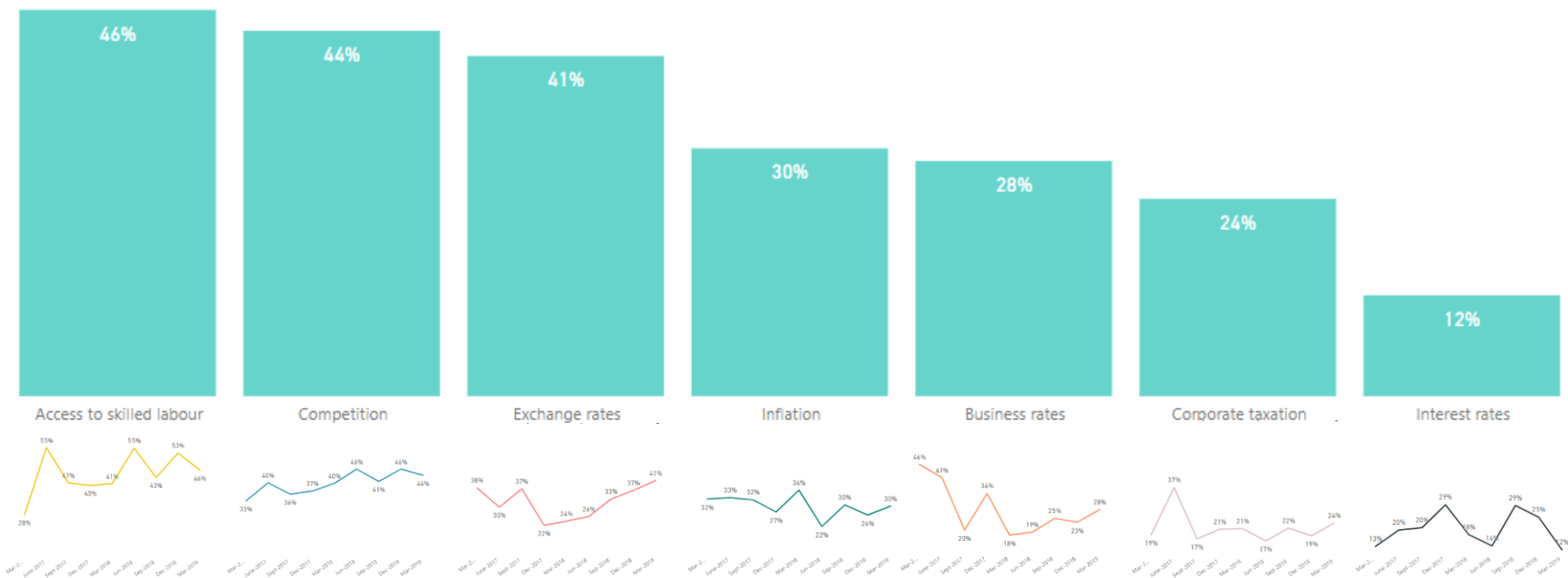

Plans for training have been:

● Revised downwards ● Revised upwards

Local businesses are most concerned about **access to skills, competition and exchange rates.**

What concerns you most (March 2019)

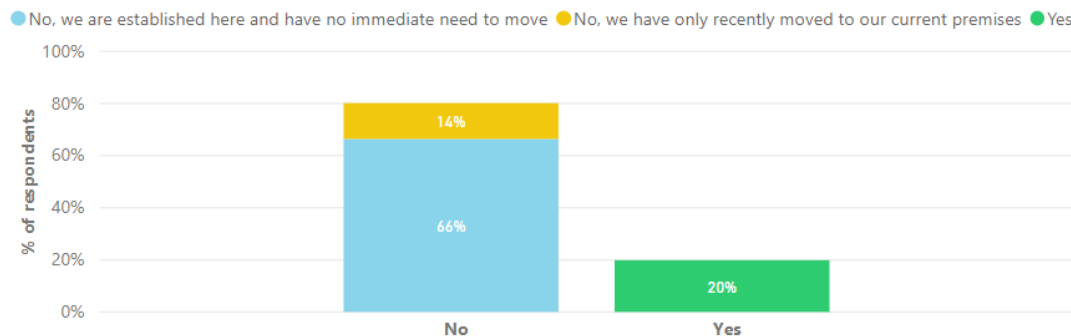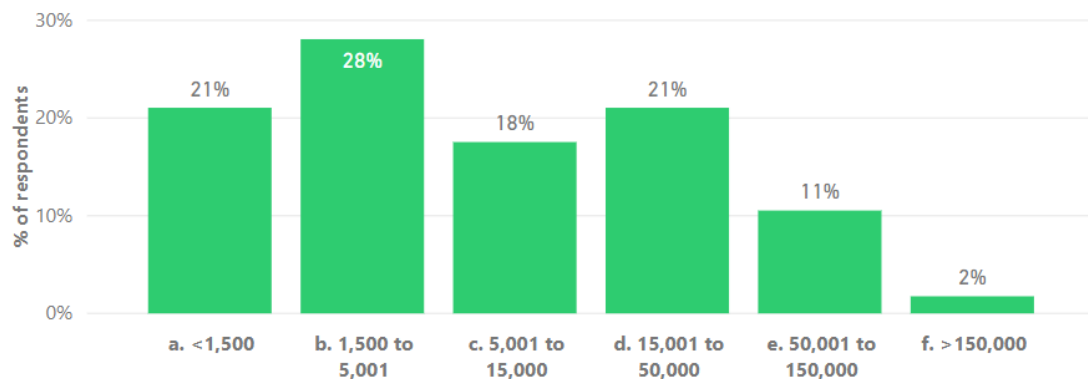|						
46%	44%	41%	30%	28%	24%	12%
Access to skilled labour	Competition	Exchange rates	Inflation	Business rates	Corporate taxation	Interest rates

Note: Trends show quarterly responses. Source: D2N2 analysis of East Midlands Chamber's Quarterly Economic Survey data (Q4 2018-19). Average n=231.

20% of respondents were looking for or expected to need new premises. Two thirds were looking for premises under 15,000 sq. ft. with factory space being most demanded type of premises.
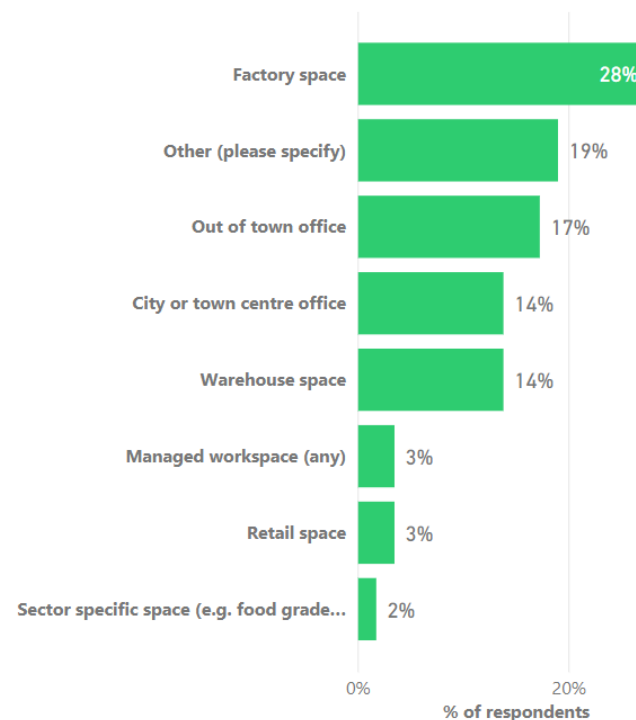
Is your business currently looking for new premises or do you expect to need new premises over the next two years?

- No, we are established here and have no immediate need to move
- No, we have only recently moved to our current premises
- Yes

What are your approximate space requirements (in square feet)?

What type of premises to you anticipate needing (if mixed, please select all that apply)?

Premises type	%
Factory space	28%
Other (please specify)	19%
Out of town office	17%
City or town centre office	14%
Warehouse space	14%
Managed workspace (any)	3%
Retail space	3%
Sector specific space (e.g. food grade...	2%

The 'Other' category included examples of light industrial and mixed use (e.g. engineering/science labs, depot and a workshop, office and warehouse) and training centers.

Note: The data may not be reflective of demand structure in all Local Authorities due to the sample size limitations.
Source: D2N2 analysis of East Midlands Chamber's Quarterly Economic Survey data (Q3 2016); n=277.

CBI analysis shows that East Midlands would fare worse in a no deal scenario relative to the rest of the country. Manufacturing, Trade and Construction are the largest sectors at risk.

Manufacturing is important to D2N2 and the East Midlands, and many of our manufacturing businesses are particularly exposed to the risk of rising tariffs and other trade costs in the event of no deal. Supply chain disruptions, which will affect just-in-time production also cause concerns. Manufacturing accounts for 17% of D2N2 GVA and 14% of employment. Food and drink sector is the largest manufacturing sub-sector. Nationally, this sub-sector is likely to see a negative impact in a no deal scenario, with GVA projected to be 11% lower after 15 years than it would be if today's arrangements persisted because agri-food firms would face very high tariffs when trading with the EU on products such as milk and chocolate, with an average additional fee of 22%.
Goods account for 83% of D2N2 exports, half of which are exported to the EU. Machinery and transport equipment goods make up the majority of exports. This sector accounts for 18% of Manufacturing GVA.

Wholesale and retail trade sector concerns are about tariffs, supply chain distribution, fall in sterling and inflation. Trade sector accounts for 13 % of GVA and 15 % of employment in D2N2.
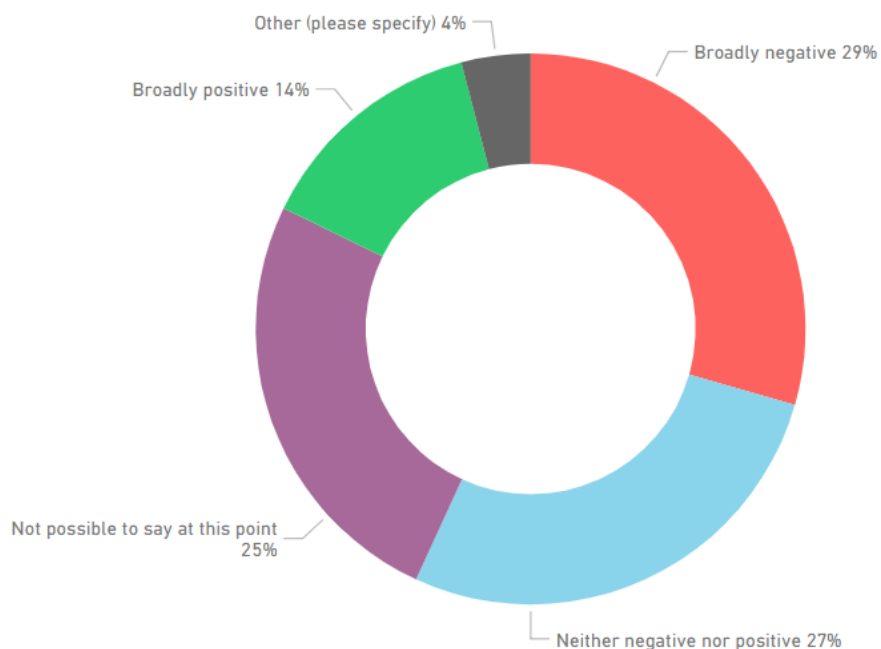
Construction sector concerns are around economic downturn, access to people and supply chain disruptions. Construction accounts 5% of GVA and 7% of employment in D2N2.

29% of respondents think than the ultimate financial impact of Brexit will be negative.
The top 3 areas where businesses would value support are new market development, workforce, and customs/export training.

Given what you currently know, what do you think would be the ultimate financial impact of the UK leaving the EU on your business?

- Other (please specify) 4%
- Broadly positive 14%
- Broadly negative 29%
- Not possible to say at this point 25%
- Neither negative nor positive 27%

Which of these areas impacted by Brexit would you value further support from the Chamber on (this could be briefing documents, workshops or other events):
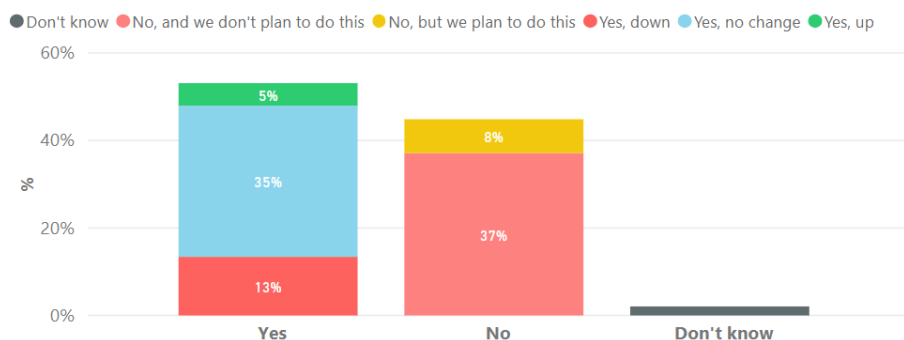
Area	%
Developing new markets	36%
Workforce and employment	36%
Customs and export training	28%
Understanding funding	24%
Understanding tax implications	20%
Corporate Strategy and Decision Making	19%
Establishing operations in other territories	15%
Sector specific support	14%
Managing supply-chains	13%
Understanding intellectual property	11%
Reviewing business structures	7%
Understanding currency	7%
Other (please specify)	6%

Source: East Midlands Chamber's Quarterly Economic Survey – Q2 2018. Number of respondents: n=192 (left), n=134 (right).
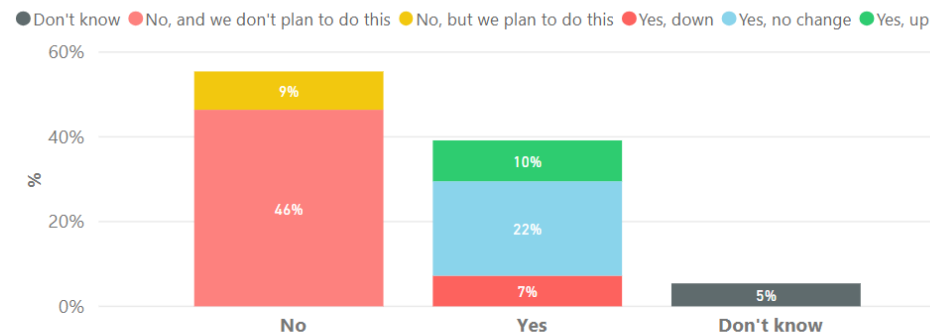
Business Environment: Brexit

As of Q2 2018, less than 10% of businesses have revised upward their growth, investment, export, or recruitment plans.

Around a third of respondents do not foresee any changes in these activities while 4 out of 10 businesses do not plan to make revisions at all.
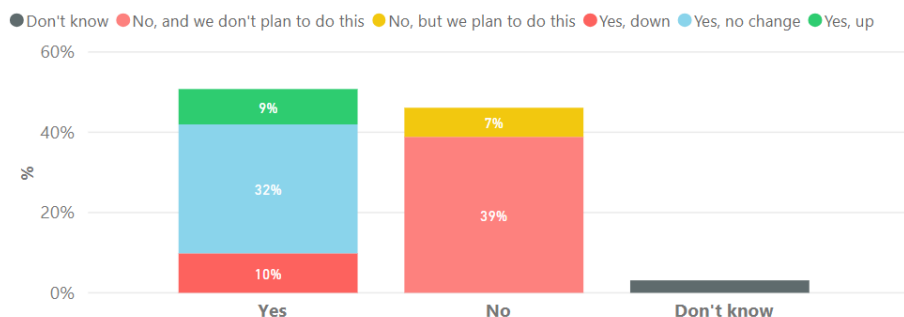
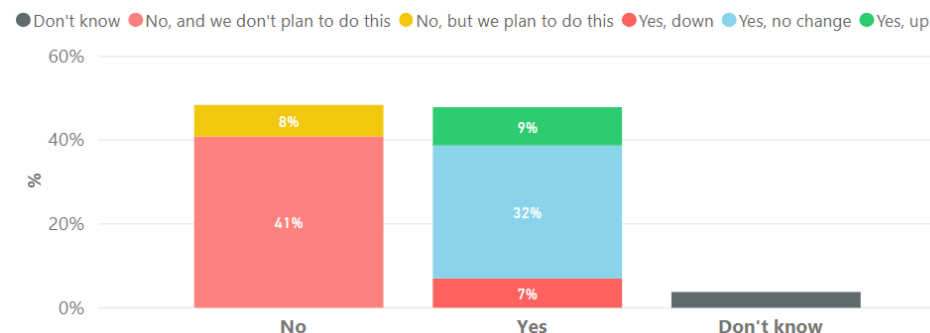**To date, has your company revised business growth projections**

● Don't know ● No, and we don't plan to do this ● No, but we plan to do this ● Yes, down ● Yes, no change ● Yes, up

Yes: 5%, 35%, 13%
No: 8%, 37%
Don't know

To date, has your company revised export plans

● Don't know ● No, and we don't plan to do this ● No, but we plan to do this ● Yes, down ● Yes, no change ● Yes, up

No: 9%, 46%
Yes: 10%, 22%, 7%
Don't know: 5%

To date, has your company revised investment plans

● Don't know ● No, and we don't plan to do this ● No, but we plan to do this ● Yes, down ● Yes, no change ● Yes, up

Yes: 9%, 32%, 10%
No: 7%, 39%
Don't know

To date, has your company revised recruitment plans

● Don't know ● No, and we don't plan to do this ● No, but we plan to do this ● Yes, down ● Yes, no change ● Yes, up

No: 8%, 41%
Yes: 9%, 32%, 7%
Don't know

More than 60% of businesses expressed various degrees of concern about potential changes in regulatory regime, workforce access, contracts and tariffs.

Thinking about your day-to-day operations, how exposed would your company's current activity be to potential changes in the following:
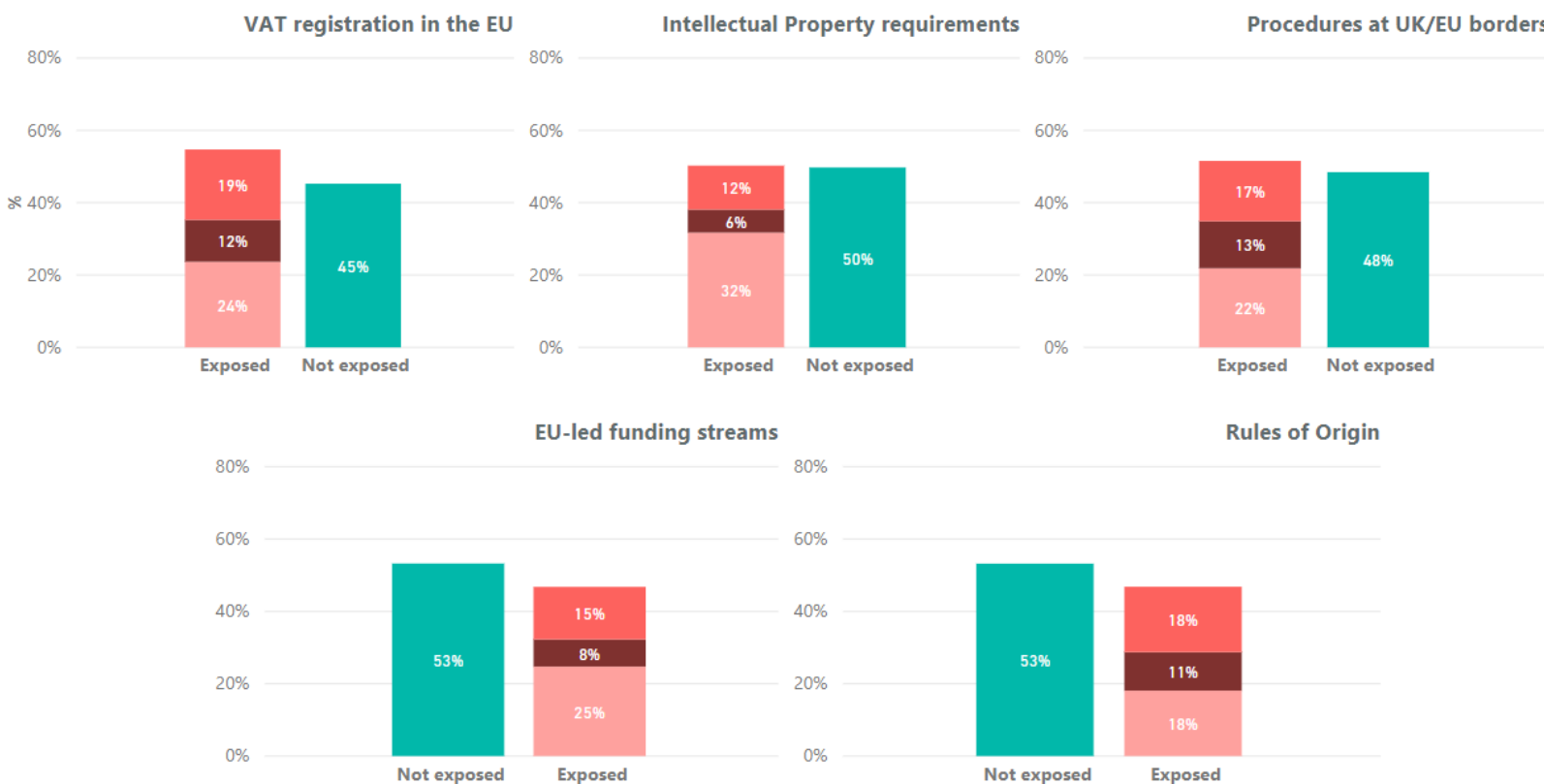
Regulatory regime

- A little exposed
- Extremely exposed
- Not at all exposed
- Somewhat exposed

	Exposed	Not exposed
Somewhat	25%	
Extremely	11%	
A little	39%	
Not at all		25%

Workforce access or retention

	Exposed	Not exposed
Somewhat	26%	
Extremely	7%	
A little	34%	
Not at all		33%

Contracts

	Exposed	Not exposed
Somewhat	21%	
Extremely	6%	
A little	37%	
Not at all		36%

Tariffs

- A little exposed
- Extremely exposed
- Not at all exposed
- Somewhat exposed

	Exposed	Not exposed
Somewhat	21%	
Extremely	14%	
A little	25%	
Not at all		40%

Creation of new trade arrangements with other countries

	Exposed	Not exposed
Somewhat	27%	
Extremely	10%	
A little	20%	
Not at all		43%

Import VAT

	Exposed	Not exposed
Somewhat	18%	
Extremely	14%	
A little	21%	
Not at all		47%

Source: East Midlands Chamber's Quarterly Economic Survey – Q2 2018. Average n=189

More than half of businesses are concerned about changes in **VAT registration in the EU, IP requirements and procedures at the borders.**
A **large proportion of businesses** are also concerned about the **changes in EU-led funding streams** and **rules of origin**

Thinking about your day-to-day operations, how exposed would your company's current activity be to potential changes in the following:
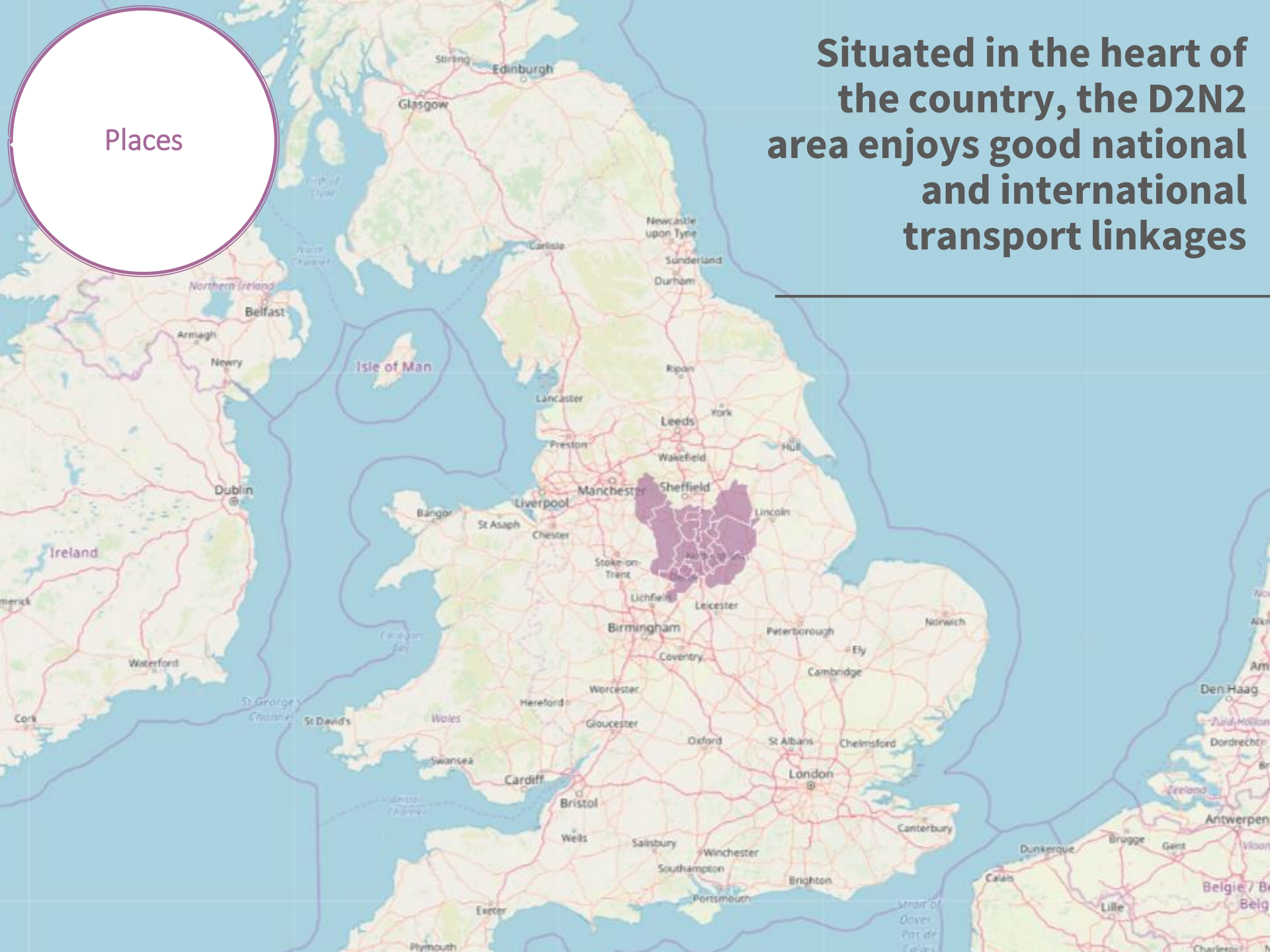
VAT registration in the EU

- A little exposed
- Extremely exposed
- Not at all exposed
- Somewhat exposed

Exposed: 24% (A little), 12% (Extremely), 19% (Somewhat)
Not exposed: 45%

Intellectual Property requirements

Exposed: 32% (A little), 6% (Extremely), 12% (Somewhat)
Not exposed: 50%

Procedures at UK/EU borders

Exposed: 22% (A little), 13% (Extremely), 17% (Somewhat)
Not exposed: 48%

EU-led funding streams

Not exposed: 53%
Exposed: 25% (A little), 8% (Extremely), 15% (Somewhat)

Rules of Origin

Not exposed: 53%
Exposed: 18% (A little), 11% (Extremely), 18% (Somewhat)

Places

- Labour market self-containment, travel-to-work and housing market areas
- D2N2 local authority district profile
- Natural capital – environmental quality index and components and flood risk
- Rural-Urban analysis of economic outcomes (productivity, workforce, population, earnings, business density, accessibility, qualifications, earnings, property market activity and prices, demographics)
- UK Competitiveness index
- Index of Multiple Deprivation

D2N2

Derby
Derbyshire
Nottingham
Nottinghamshire

Places

Situated in the heart of the country, the D2N2 area enjoys good national and international transport linkages

D2N2 has one of the highest average self-containment

Outward commuting:
86% of D2N2 residents work in D2N2
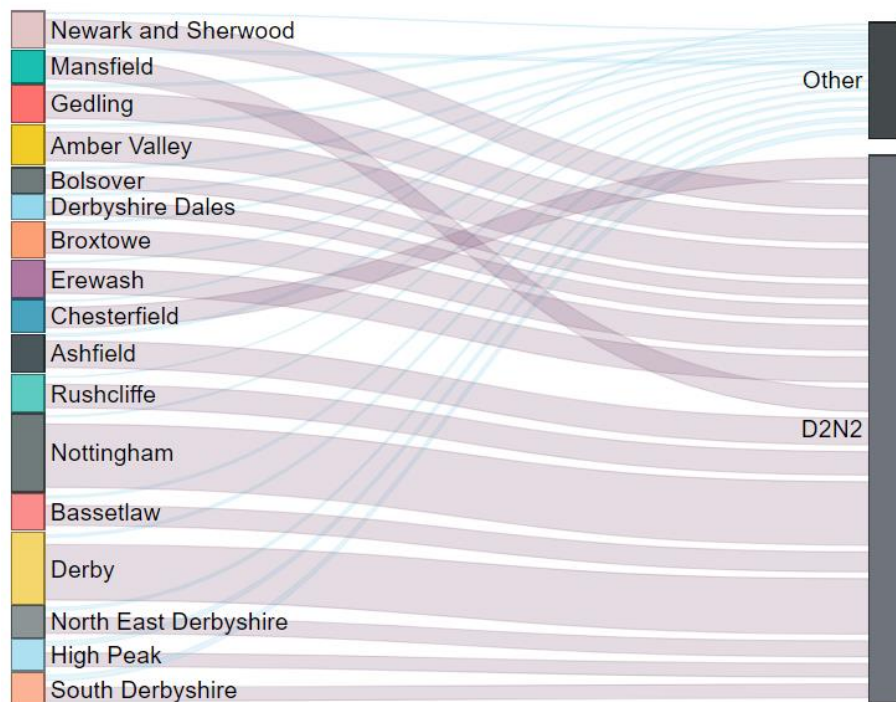
Inward commuting:
91% of D2N2 workforce live in D2N2

Source: D2N2 analysis of 2011 Census

Travel to Work areas

Legend:
- County Boundary
- District Boundary
- Lincoln TTWA
- Worksop TTWA
- Mansfield TTWA
- Burton TTWA
- Nottingham TTWA
- Derby TTWA
- Sheffield TTWA
- Chesterfield TTWA
- Manchester TTWA
- Buxton TTWA
- D2N2 / SCR area

Date: 31/08/2018
Mapped by:Policy & Research, Derbyshire County Council
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Ordnance Survey [100023251].
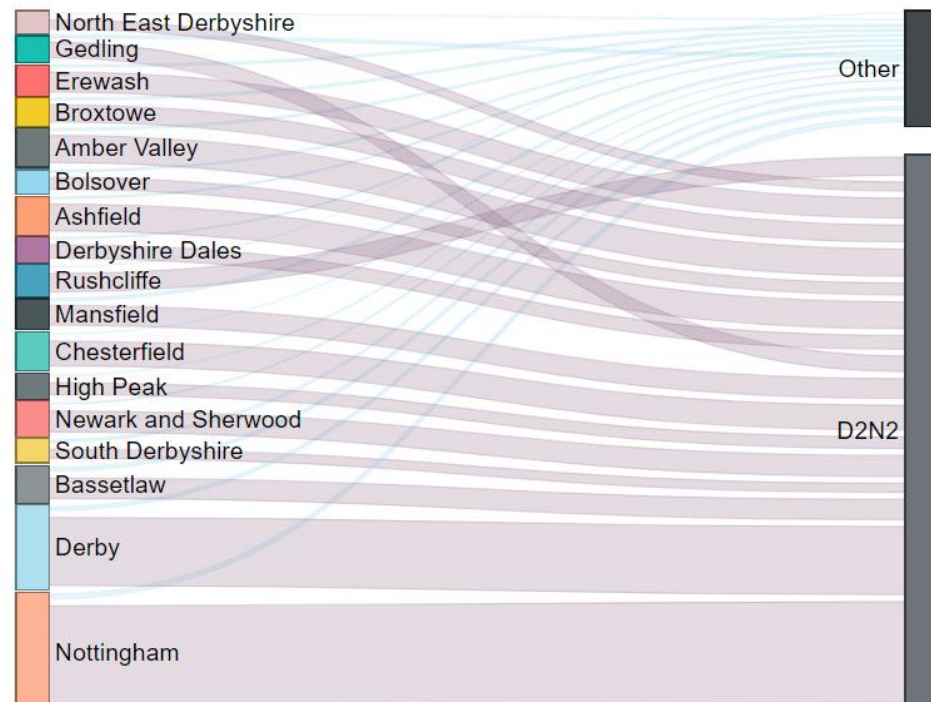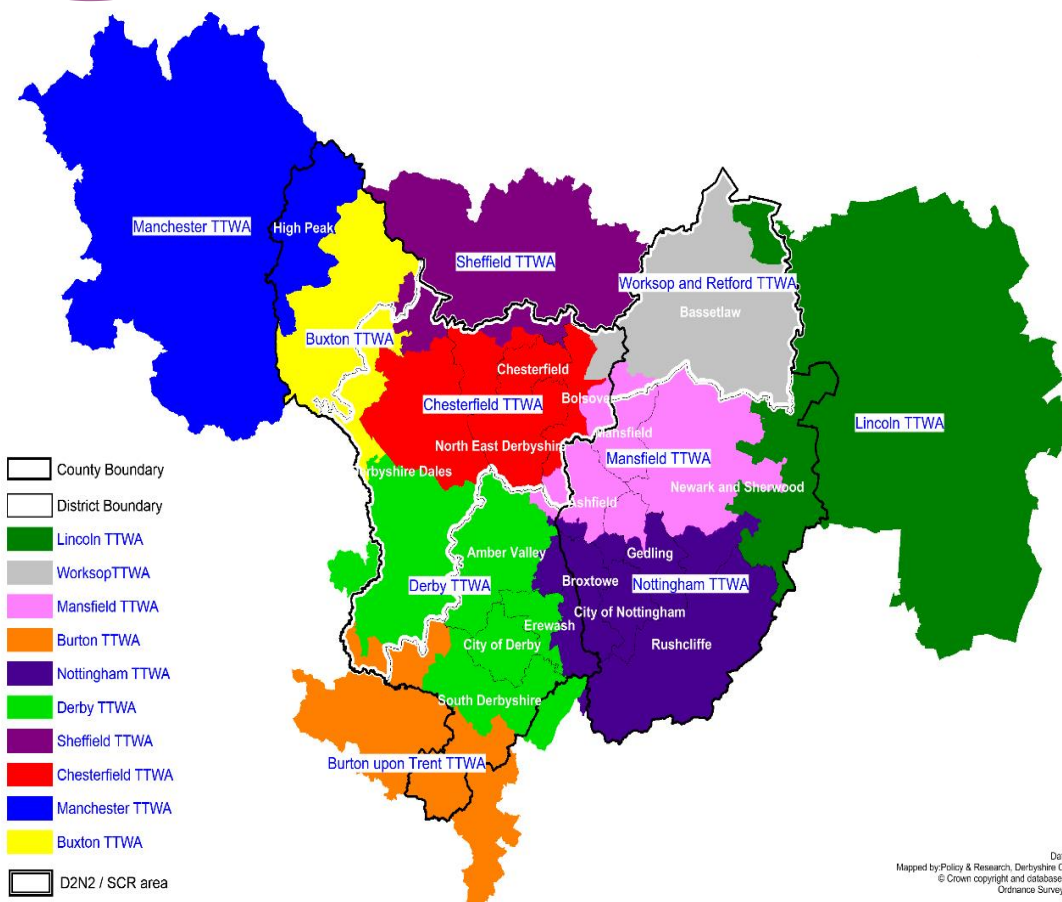
Despite being one of the most self-contained LEP functional economic areas, as a large, well connected economy in the centre of England we have important economic relationships with our neighbouring LEPs and considerable diversity within our area.

D2N2 wholly contains 5 travel to work areas, the vast majority of one more (Derby) and parts of 4 further travel to work areas. Co-operational and collaboration with neighbouring LEPs, where we can achieve more together, will remain key.

Overall 87% of learners resident within D2N2 undertook their further education within the LEP area between 2011/12 and 2014/15.

% learning in D2N2

Min   Max

South Derbyshire 50%

Amber Valley 94%
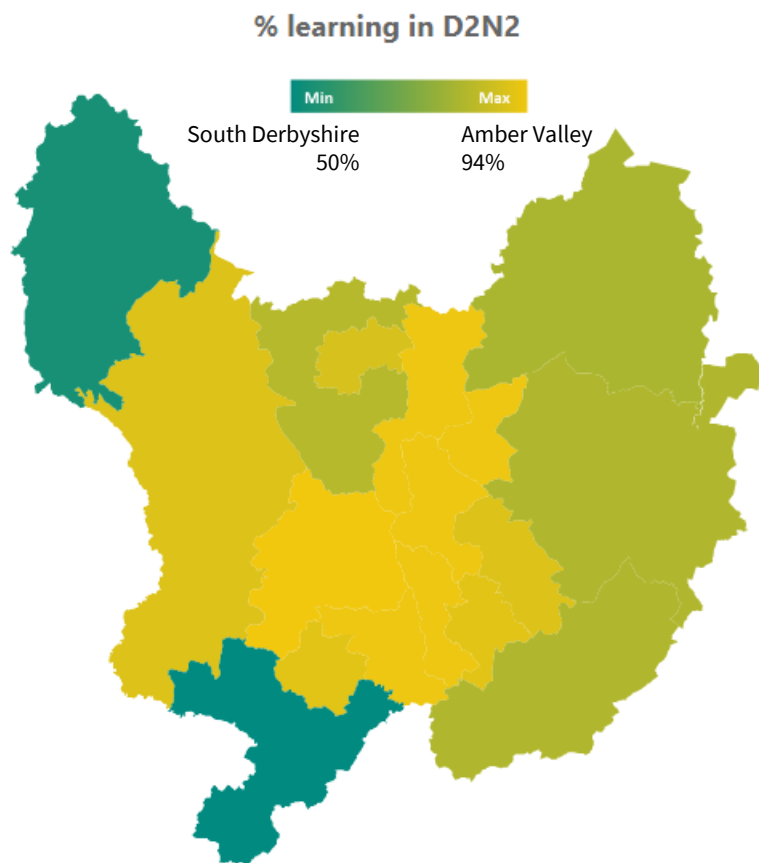
- Six districts have a below average proportion of learners learning within the D2N2 area – South Derbyshire, High Peak, Bassetlaw, Rushcliffe, Newark and Sherwood and North East Derbyshire.
- As with the travel to work analysis, these are districts with links to other conurbations outside the D2N2 boundary.
- Key destinations for travel to learn outside the LEP area include:
    - South Derbyshire – East Staffordshire, NW Leicestershire
    - High Peak – Stockport, Tameside, Manchester
    - Bassetlaw – Doncaster, Lincoln, Rotherham
    - Rushcliffe – Charnwood
    - Newark and Sherwood – Lincoln
    - NE Derbyshire – Sheffield
- Younger learners are more likely to be learning within the D2N2 area.
- On average, those studying at lower qualification levels are more likely to be learning within D2N2, whilst those studying higher level qualifications are more likely to be outside the area.

D2N2 wholly contains 6 housing market areas, two of which cross City or County administrative boundaries.

Key:
- Nottingham Outer
- Nottingham Core
- North East Derbyshire and Bassetlaw
- Derby
- Derbyshire Dales
- High Peak

Districts with a yellow border are in the D2N2 / SCR Overlap Area
Thin black lines indicate district boundaries
Thick Black Lines indicate County Boundaries

Source: 2011 Census, Derbyshire County Council mapping, Strategic Housing Market Assessments. Alternative mapping based on application of commuting and household migration thresholds applied by CLG can be found here.

There is considerable variation in economic outcomes among administrative areas

Area	Productivity (GVA per worker, 2017)	GVA per head (2017)	Resident earnings (2018)	Workplace earnings (2018)	Activity rates (2018)	Employment rates (2017)	Higher skills (NVQ 4+, % 2018)	House price to income ratio (2017)	Business density per 10k residents (2017)	Business births per 10k residents (2017)
Cities										
Derby	£ 53,023	£ 26,817	£31,991	£ 36,156	79.3%	71.3%	31.9%	5.06	323	42
Nottingham	£ 42,770	£ 29,361	£23,288	£ 26,329	71.0%	57.4%	30.1%	5.53	315	44
Derbyshire										
Amber Valley	£ 52,780	£ 20,961	£29,694	£ 28,974	78.9%	80.7%	33.9%	5.33	370	39
Bolsover	£ 59,000	£ 22,377	£24,925	£ 23,802	74.8%	73.6%	25.8%	5.29	315	30
Chesterfield	£ 44,600	£ 21,324	£26,070	£ 26,071	77.1%	66.7%	26.1%	5.51	350	32
Derbyshire Dales	£ 47,182	£ 21,670	£30,882	£ 27,126	86.9%	79.4%	47.4%	7.91	577	47
Erewash	£ 45,289	£ 14,924	£27,622	£ 26,272	86.7%	79.9%	31.0%	5.38	349	37
High Peak	£ 48,438	£ 16,836	£27,821	£ 23,702	80.0%	81.9%	43.0%	6.14	432	39
North East Derbyshire	£ 48,846	£ 12,602	£28,916	£ 28,215	80.0%	81.2%	27.3%	6.61	327	32
South Derbyshire	£ 79,419	£ 24,046	£32,939	£ 28,740	78.0%	79.2%	33.0%	6.33	367	37
Nottinghamshire										
Ashfield	£ 52,788	£ 21,757	£25,366	£ 25,396	76.3%	68.8%	17.9%	5.55	264	43
Bassetlaw	£ 44,735	£ 18,847	£28,431	£ 24,565	69.0%	73.2%	31.5%	5.56	344	37
Broxtowe	£ 56,395	£ 19,012	£29,557	£ 25,420	76.3%	81.1%	38.8%	5.52	440	45
Gedling	£ 45,344	£ 12,388	£29,073	£ 32,691	79.8%	75.3%	38.7%	5.96	323	35
Mansfield	£ 38,325	£ 14,119	£23,870	£ 22,922	82.4%	73.3%	17.5%	5.43	283	37
Newark and Sherwood	£ 47,653	£ 19,303	£27,255	£ 23,081	67.7%	80.1%	26.0%	6.78	404	43
Rushcliffe	£ 58,585	£ 20,708	£34,790	£ 30,228	82.3%	80.9%	46.0%	7.21	494	57
Benchmark										
Midlands Engine (64)	£ 50,758	£ 22,097	£28,141	26,723	75.7%	72.8%	31.5%	6.59	385	48
England	£ 60,523	£ 28,096	£29,869	29,872	78.0%	75.1%	38.3%	7.91	464	58

Note: Employment rates are calculated as a ratio or employed residents to economically active residents (Jan-Dec 2017). Source: D2N2 analysis of data compiled by the Midlands Engine Observatory.

Protecting and enhancing our Natural Capital Asset Base is a fundamental principle of the Government's 25 Year Environment Plan

Natural Capital to improve economic growth and productivity

INDUSTRIAL STRATEGY

Our environment underpins our wellbeing and prosperity. We see the economic benefits that flow from the natural world and our natural heritage in increased productivity.

HM Government
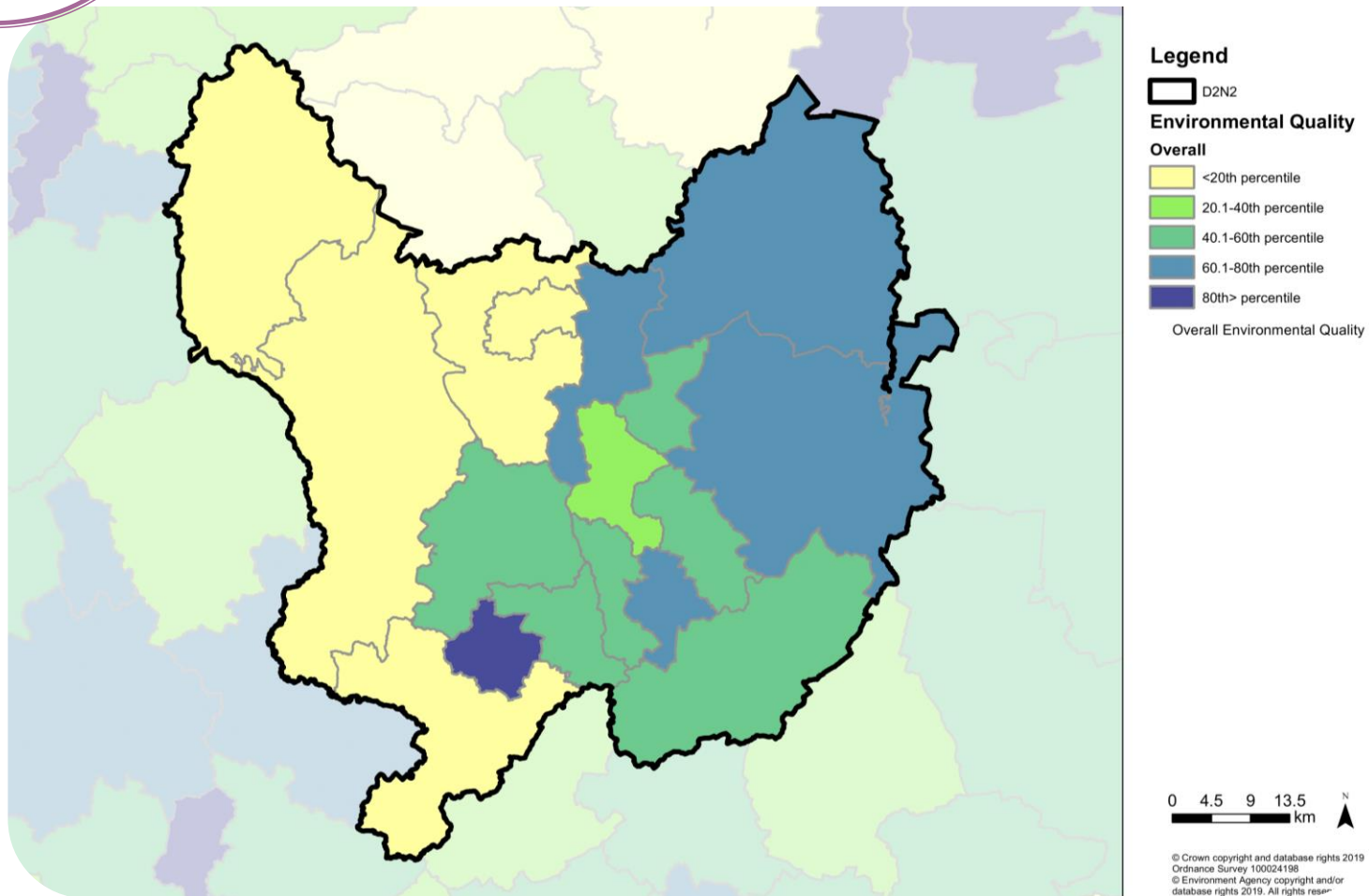
A Green Future: Our 25 Year Plan to Improve the Environment

We are working with the Environment Agency and Natural England to establish a baseline of Natural Capital assets, risk and opportunities to inform investment plans.

The quality of our natural capital assets underpins our capacity for sustainable development, clean growth and place making. It is essential to maintain and enhance the quality of natural capital assets.

There are apparent inequalities in natural capital, environmental quality and public engagement in the D2N2 area.

Legend

☐ D2N2

Environmental Quality
Overall

- ☐ <20th percentile
- ☐ 20.1-40th percentile
- ☐ 40.1-60th percentile
- ☐ 60.1-80th percentile
- ☐ 80th> percentile

Overall Environmental Quality

0   4.5   9   13.5
km

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Air quality has a significant impact on human health and environmental resilience.
There is East/West split in D2N2 with worse air quality in urban areas.
Derby and Nottingham are in bottom 20% nationally.

Legend

D2N2

Environmental Quality

Air

- <20th percentile
- 20.1-40th percentile
- 40.1-60th percentile
- 60.1-80th percentile
- 80th> percentile

Air Quality
(combined NOx, PM10, PM2.5, SO2)

0   4.5   9   13.5
km

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Note: lower percentile = better quality Source: Environment Agency, Natural England

Water resources are under pressure across D2N2 area and are carefully managed.
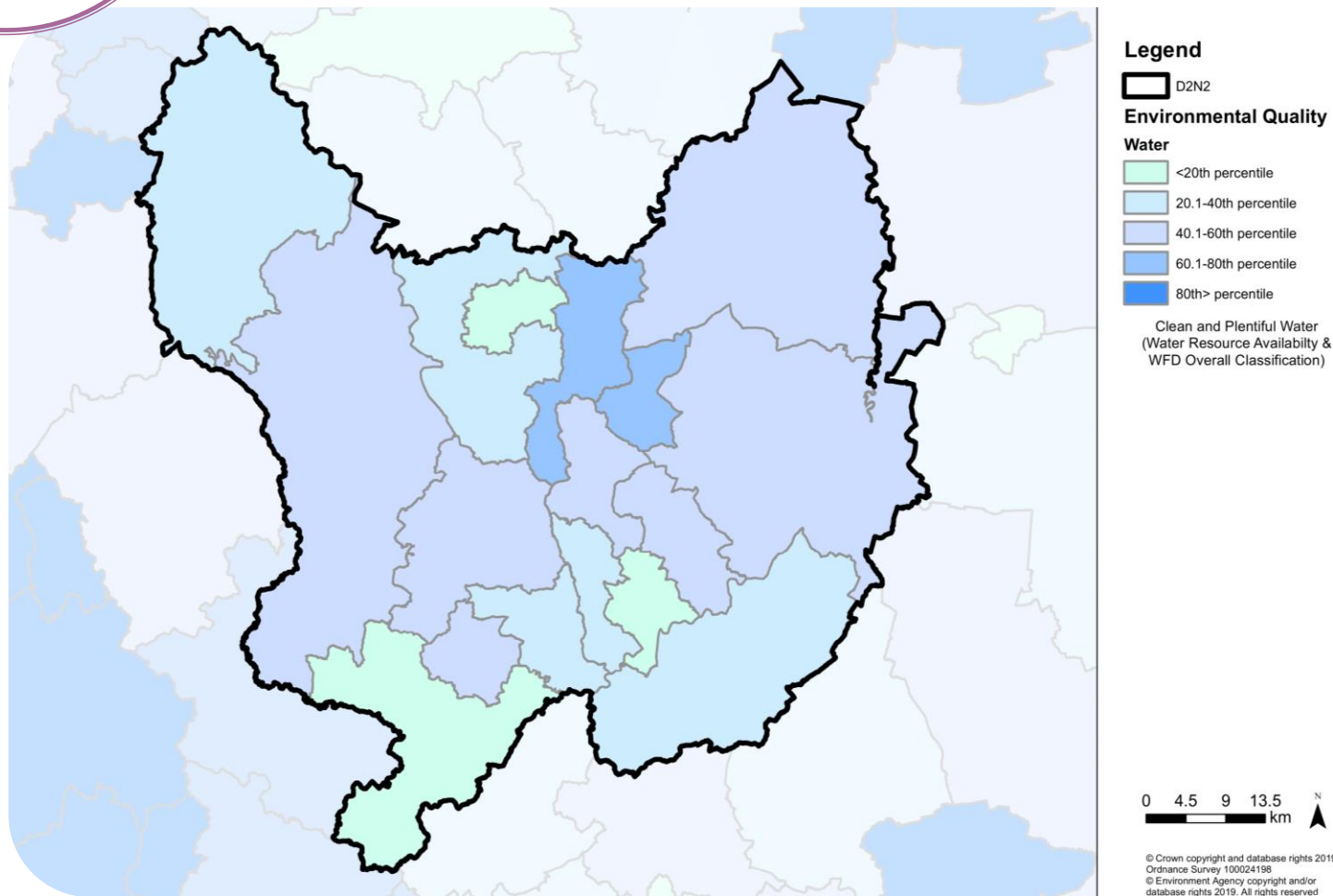
Legend

☐ D2N2

Environmental Quality

Water

- <20th percentile
- 20.1-40th percentile
- 40.1-60th percentile
- 60.1-80th percentile
- 80th> percentile

Clean and Plentiful Water
(Water Resource Availabilty &
WFD Overall Classification)

0   4.5   9   13.5
km

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Note: lower percentile = better quality Source: Environment Agency, Natural England

There is a north south split of quality and extent of biodiversity across D2N2.
Natural capital value of biodiversity is both functional* and cultural (sense of place and quality of life).

Legend

D2N2

Environmental Quality

Plants & Wildlife

- <20th percentile
- 20.1-40th percentile
- 40.1-60th percentile
- 60.1-80th percentile
- 80th> percentile

Important Areas for Plants & Wildlife
(SAC, LNR, NNR, SSSI, PHI,
Ancient Woodland, Wood-Pasture,
BAP Priority Habitat, Open Mosic Habit
RAMSAR, SPA, RSPB Reserves
Priority River Habitat)

0   4.5   9   13.5
km

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Note: lower percentile = better quality; *pollination, waste remediation, carbon storage.
Source: Environment Agency, Natural England

Places: Green space

Quality of access to the natural environment is a valuable capital asset to quality of life and place making.

Legend

D2N2

Environmental Quality

UrbanGreen

- <20th percentile
- 20.1-40th percentile
- 40.1-60th percentile
- 60.1-80th percentile
- 80th> percentile

Engagement with the Natural Environment (Public Parks, Play Space, Playing Fields, Allotments or Community Growing Spaces & Woodland within large urban areas)

0 4.5 9 13.5 km

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Note: lower percentile = better quality Source: Environment Agency, Natural England

Places: Waste

Effective waste management and infrastructure is a prerequisite of clean growth and sustainability. Issues such fly-tipping and insufficient household recycling have a negative impact on the natural environment and quality of place.
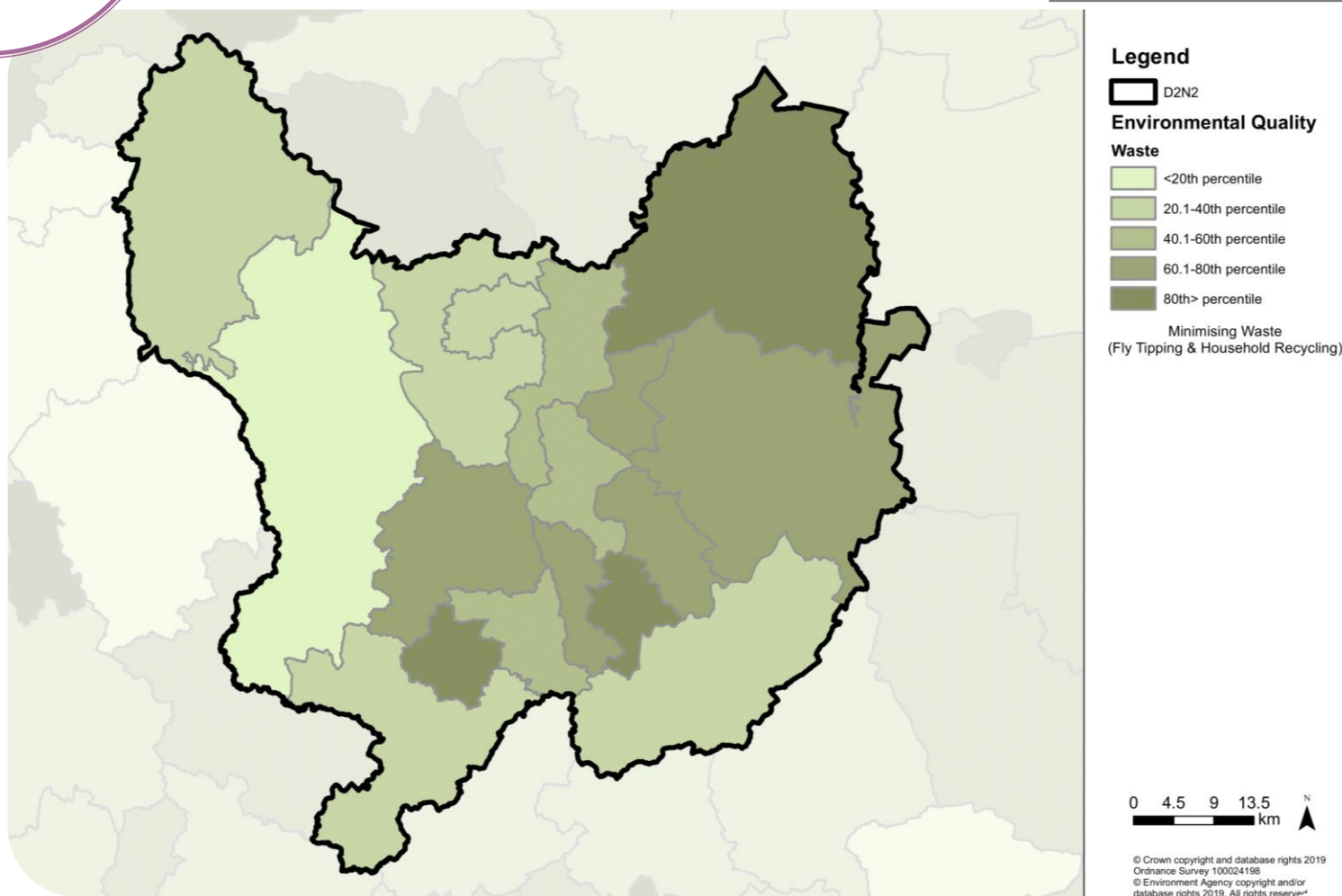
Legend

▢ D2N2

Environmental Quality

Waste

- <20th percentile
- 20.1-40th percentile
- 40.1-60th percentile
- 60.1-80th percentile
- 80th> percentile

Minimising Waste
(Fly Tipping & Household Recycling)

0   4.5   9   13.5
km

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Note: lower percentile = better quality Source: Environment Agency, Natural England

The cities of Nottingham and Derby are at risk of flooding from a number of different sources. From larger rivers such as the River Trent and Derwent, smaller urbanised watercourses such as the River Leen and Erewash as well as at risk from surface water flooding.

D2N2 Communities & Local Economies @ Flood Risks Mapping
From prototype of online GIS tool that shows the location of places, the sources of risk, the scale & the numbers of homes, businesses & local economic services which are at flood risk from both rivers & the sea and from surface water & drainage.

Source: Environment Agency, Natural England
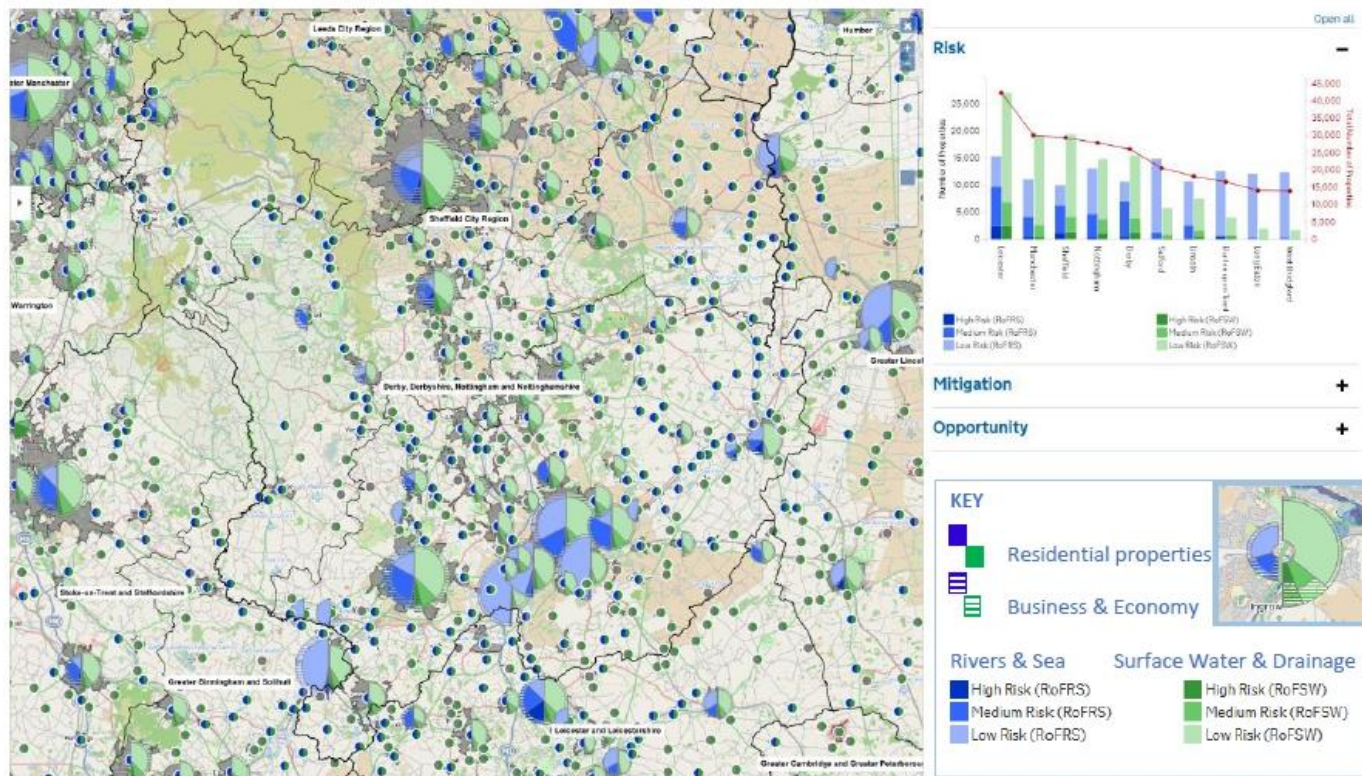
While D2N2 is 91% rural by land area, 32% of population lives in rural areas*.

Rural
Urban

Rural hamlets and isolated dwellings
Rural town and fringe
Rural village
Urban city and town
Urban major conurbation
Urban minor conurbation
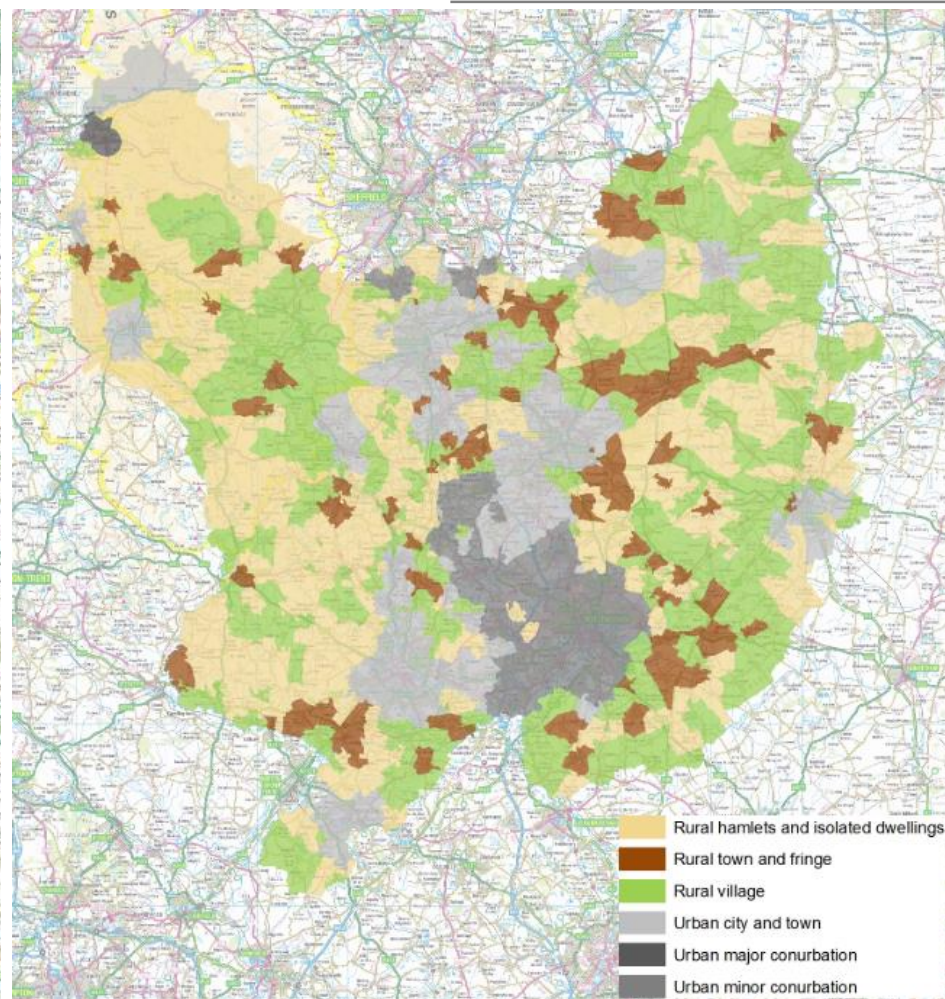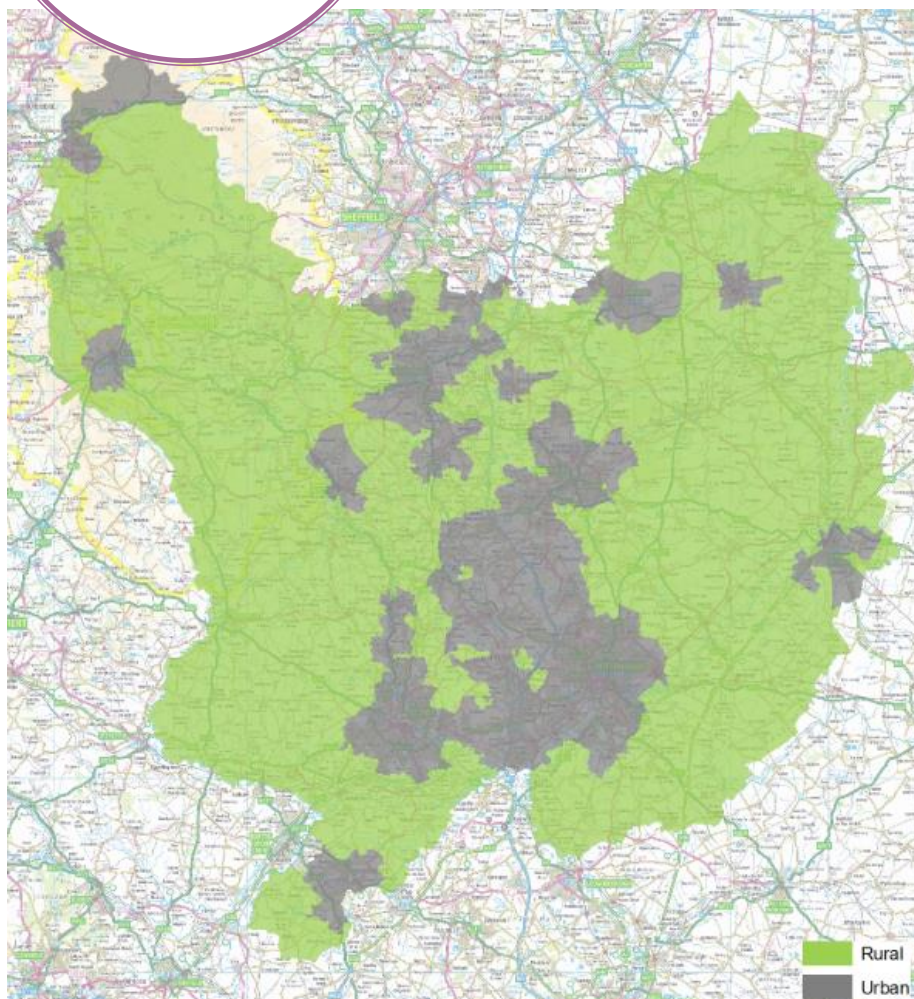
Note: *Local Authorities classified as Mainly Rural, Predominantly Rural or Urban with Significant Rural
Source: ONS, DEFRA, DCLG; 2011 Census

Both urban and rural areas have productive places. Our **most productive LAs have a comparatively smaller workforce.**

Employment and Productivity by Rural-Urban Classification
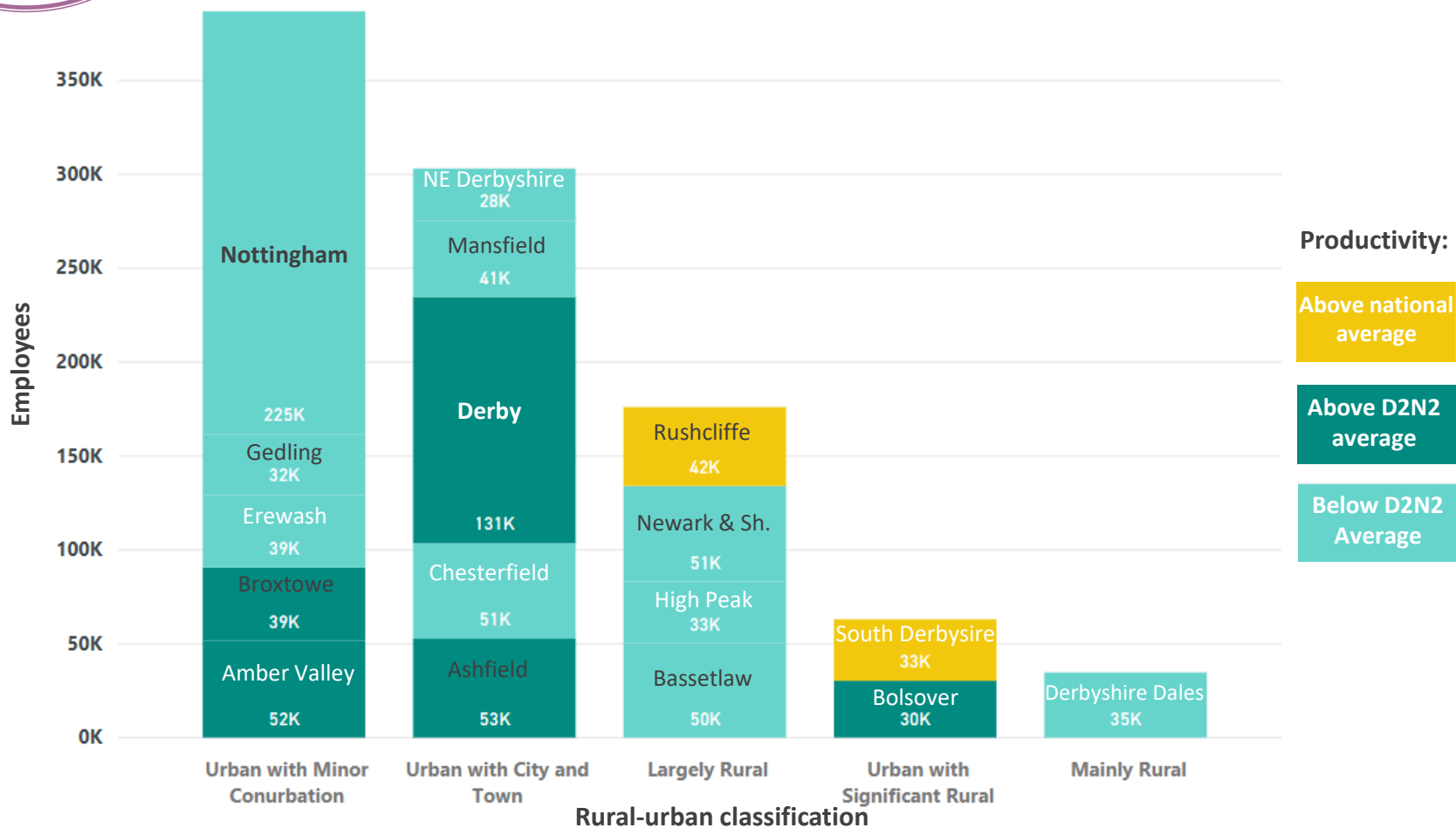
Productivity:

- **Above national average** (yellow)
- **Above D2N2 average** (dark teal)
- **Below D2N2 Average** (light teal)

D2N2 Derby Derbyshire Nottingham Nottinghamshire

defra

More **productive places** tend to **have higher resident earnings.**

Population and Resident Earnings by Rural-Urban Classification

Resident Earnings

- **Above national average**
- **Above D2N2 average**
- **Below D2N2 Average**

Urban with Minor Conurbation
- Nottingham 329K
- Gedling 117K
- Erewash 115K
- Broxtowe 113K
- Amber Valley 126K

Urban with City and Town
- NE Derbyshire 101K
- Mansfield 109K
- Derby 257K
- Chesterfield 105K
- Ashfield 126K

Largely Rural
- Rushcliffe 116K
- Newark & Sh. 121K
- High Peak 92K
- Bassetlaw 116K

Urban with Significant Rural
- South Derbysire 102K
- Bolsover 79K

Mainly Rural
- Derbyshire Dales 72K

Population

Rural-urban classification

Rural areas have **lower broadband speeds.**

Business Counts and Average Download Speeds by Rural-Urban Classification

Source: Nottinghamshire County Council analysis
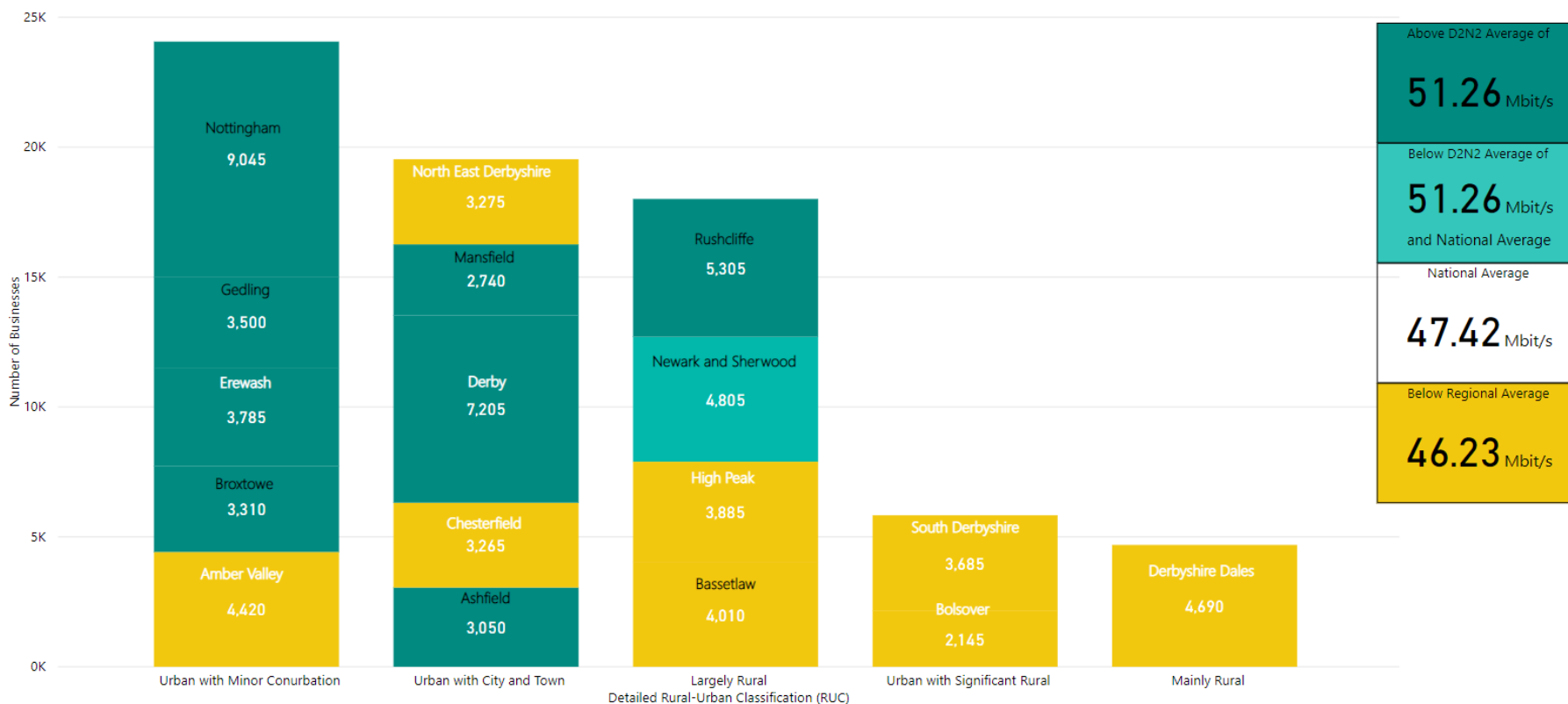
Nevertheless, rural areas manage to maintain **higher business density.**

Business Density (Number of Businesses per 10,000 Adults) and Average Download Speeds by Rural-Urban Classification

Mainly Rural
- Derbyshire Dales 768

Largely Rural
- Bassetlaw 418
- Rushcliffe 554
- Newark and Sherwood 482
- High Peak 508

Urban with Significant Rural
- South Derbyshire 435
- Bolsover 328

Urban with Minor Conurbation
- Amber Valley 420
- Gedling 362
- Erewash 400
- Broxtowe 353
- Nottingham 336

Urban with City and Town
- North East Derbyshire 387
- Mansfield 310
- Chesterfield 376
- Ashfield 296
- Derby 355

Above D2N2 Average of
51.26 Mbit/s

Below D2N2 Average of
51.26 Mbit/s
and National Average

National Average
48.70 Mbit/s

Below Regional Average
46.23 Mbit/s

Source: Nottinghamshire County Council analysis

Places: Urban-rural split

The time it takes to travel to a town centre as well as car ownership rates are higher in rural areas, suggesting poor public transport links and greater reliance on personal vehicles.

Journey Times to Town Centres (in minutes) and Percentage of Households with no Car or Van by Rural-Urban Classification

- Home to Rural Town Centre by Car
- Home to Rural Town Centre by Public Transport/Walking
- Home to Urban Town Centre by Car
- Home to Urban Town Centre by Public Transport/Walking
- % of Households with No cars or vans

Y-axis: Journey time from Home to Town Centre in minutes

Mainly Rural: 14.75, 25.12, 8.97, 13.79, 14.80
Largely Rural: 16.19, 27.64, 11.08, 17.26, 18.35
Urban with Significant Rural: 16.99, 31.31, 10.86, 17.61, 18.45
Urban with City and Town: 9.07, 15.51, 13.83, 22.24, 24.72
Urban with Minor Conurbation: 5.69, 9.35, 11.10, 16.90, 25.68

X-axis: Mode of Transport and Home to Destination Rural-Urban Classification

National Average
12 mins
Rural (car)

National Average
25 mins
Rural (PT/walk)

National Average
11 mins
Urban (car)

National Average
18 mins
Urban (PT/walk)

November 2019

Source: Nottinghamshire County Council analysis

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People with **higher qualifications** (NVQ 4+) **travel further for work**, especially from rural areas.

Average Usual Home to Work travel time (in minutes) and Percentage of Population holding qualification by Rural-Urban Classification

● Average Usual home to work travel time (minutes) ● NVQ1 ● NVQ2 ● NVQ3 ● NVQ4+
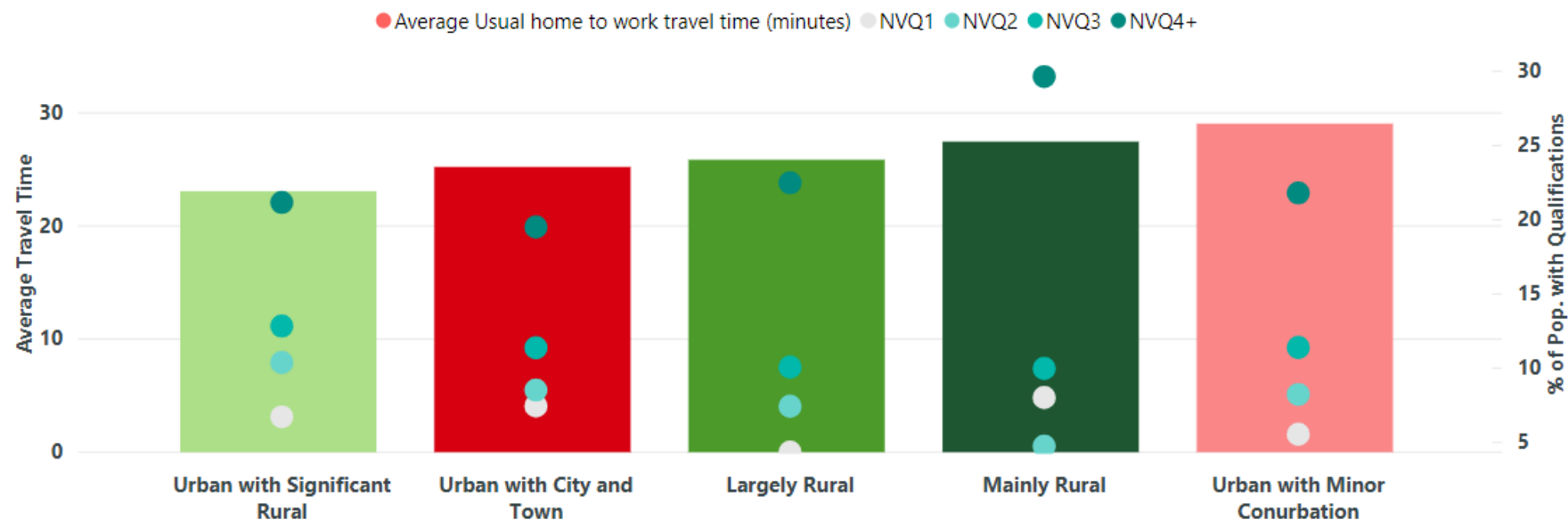
While median resident earnings in rural areas are higher, workplace-based earnings are slightly lower compared to urban areas.

Median Yearly Pay by Rural-Urban Classification
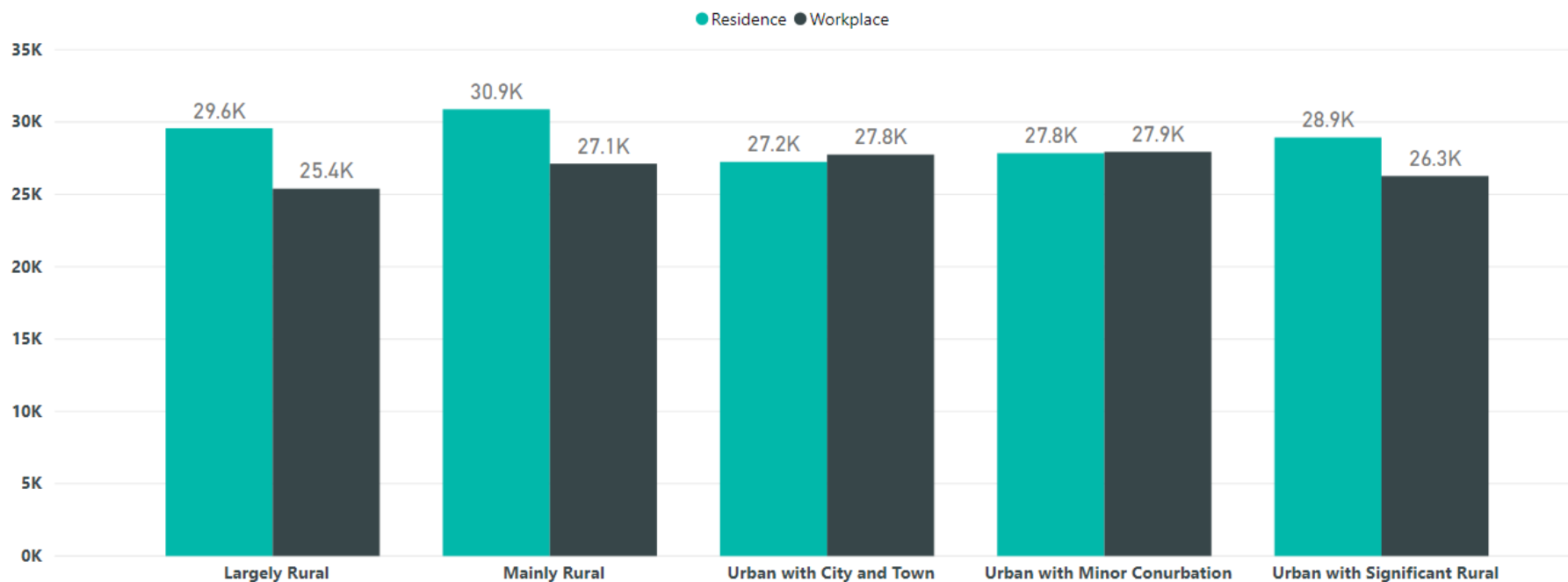
● Residence ● Workplace

	Residence	Workplace
Largely Rural	29.6K	25.4K
Mainly Rural	30.9K	27.1K
Urban with City and Town	27.2K	27.8K
Urban with Minor Conurbation	27.8K	27.9K
Urban with Significant Rural	28.9K	26.3K

Property prices are higher in rural areas. The **market for existing dwellings** tends to be **more active in urban areas.**

Median Property Price Paid, Existing and New Build Sales by Rural-Urban Classification

● Median Price Sold   ● New Build Sales   ● Existing Dwelling Sales

Over the last decade, property price dynamics appear largely similar across rural-urban categories with a negative trend in the first half of the decade and strong recovery thereafter.

Median Property Price Growth over 10 years by Rural-Urban Classification

● Largely Rural ● Mainly Rural ● Urban with City and Town ● Urban with Minor Conurbation ● Urban with Significant Rural

Some urban areas trail behind the rest, with 10-year growth rates under 30% (Derby, Mansfield, and Chesterfield)

Largely Rural	32.4%
Mainly Rural	31.8%
Urban with City and Town	27.0%
Urban with Minor Conurbation	32.8%
Urban with Significant Rural	32.3%
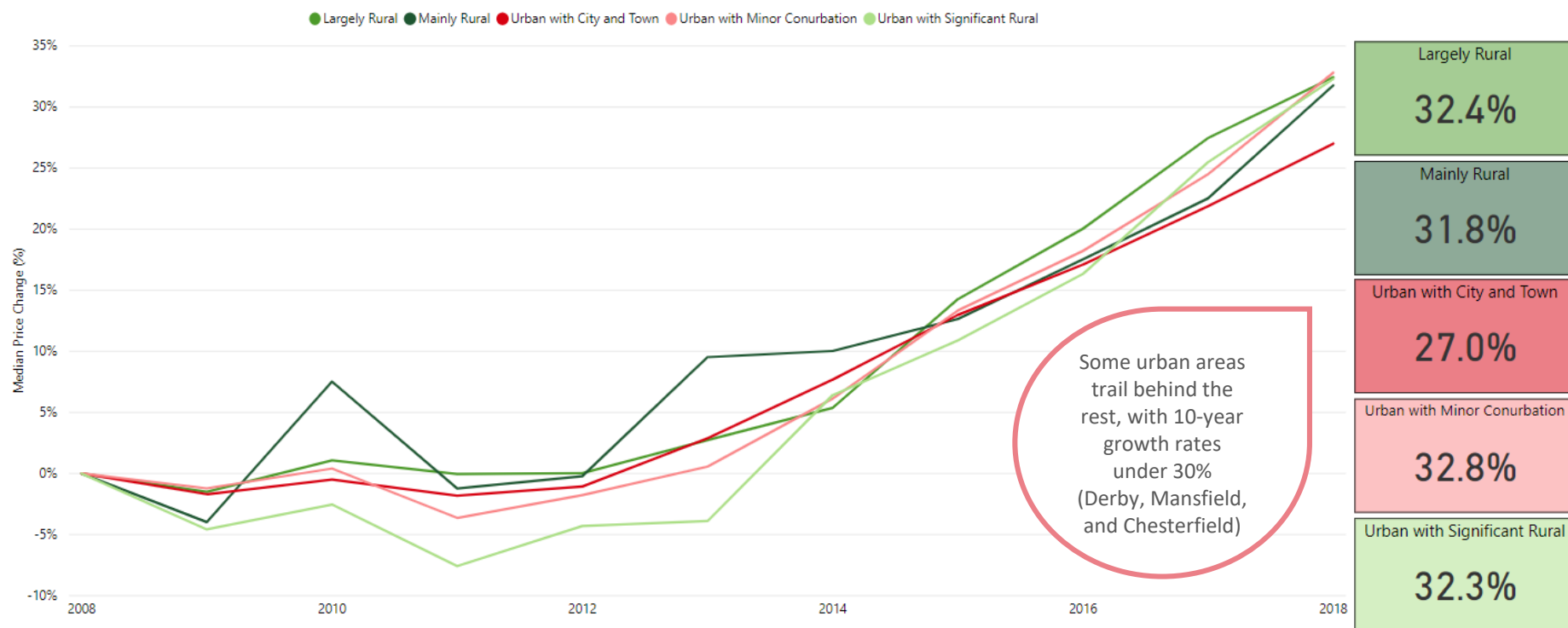
Source: D2N2 and Nottinghamshire County Council analysis

Places: Urban-rural split

Urban populations are younger while rural areas have older workforce and higher proportion of retiring population.

Population Age Bands by Rural-Urban Classification

Age Bands ● 0-15 ● 16-39 ● 40-64 ● 65+

National
- 18.2%
- 31.7%
- 31.0%
- 19.2%

East Midlands
- 19.3%
- 32.2%
- 29.9%
- 18.6%

Largely Rural
- 21.4% (65+)
- 34.6% (40-64)
- 26.2% (16-39)
- 17.9% (0-15)

Mainly Rural
- 27.0% (65+)
- 36.7% (40-64)
- 21.1% (16-39)
- 15.2% (0-15)

Urban with City and Town
- 19.1% (65+)
- 32.2% (40-64)
- 29.7% (16-39)
- 19.0% (0-15)

Urban with Minor Conurbation
- 17.2% (65+)
- 30.2% (40-64)
- 34.6% (16-39)
- 18.0% (0-15)

Urban with Significant Rural
- 19.0% (65+)
- 34.4% (40-64)
- 28.2% (16-39)
- 18.4% (0-15)

Source: D2N2 and Nottinghamshire County Council analysis

Differences in geography lead to different service delivery issues*

Rural Delivery Costs

Factor	How it affects delivery costs
Distance	Rural areas are far from major urban centres, which makes all forms of connectivity more expensive.
Population	Low levels of population make it hard to achieve a critical mass.
Density	Distance and low population levels result in low density and higher dispersion, which increses the costs of connecting people through markets or government action.
Economies of scale	Unit costs in small communities tend to be significantly higher than in large ones.
Additional travel costs	Greater distances imply increased travel for clients and workers and, for services taken to clients, there are additional transport costs.
High level of unproductive time	More time spent travelling results in higher levels of unproductive staff time.
Access to training, consultancy and other support services	Trainig requiremnts in more remote areas are invitably more costly to fulfil.
Ageing population	As the population ages the mix of services demanded shifts which may require new investments to increase the supply of the services demanded by seniors. A relative scarcity of working age adults requires higher wages to attract them, which increases costs.
Decreasing subsidies	Macroeconomic conditions and increasing deficits often drive cost reduction which affects rural service delivery.
Increasingly diverse population	The population mix - residents historically rooted in the region, newly retired people, second home residents or newcomers who commute to a city for work - may result in fragmented demand. The need to obtain services away from the place of residence means that the effective demand in a community may be less than than the local population would suggest.
Limited choice	Insufficient local demand leads to low number of service providers limiting choice and pressure to compete or to deliver services in a cost-effective manner.
Weaker communication networks	Weaker communication networks make it harder to deliver services efficiently. Transport and broadband are valuable services which also enable other goods and services to be produced and distributed. Weak networks increase the cost of providing services and reduce their reliability.

Rural Delivery Costs

Recognising the 'Rural Premium'

- Rural areas offer significant economic growth potential. However, additional challenges impact on the way services are delivered and the cost of intervention

- Key challenges: access to services (distance and transport links); population density (dispersal Vs critical mass); demographics (fewer younger people / ageing population); inadequate economic infrastructure (variable digital connectivity and mobile coverage, road infrastructure and available workspace); logistics (distance involved in moving goods) and reliance on road transportation; predominance of micro-enterprises (but aggregate impact significant); recruitment (right skills and mobile); added design & development requirements (landscape and environmental impacts)

- Different 'scale of operation' and higher unit delivery cost in rural context not reflected in traditional VfM assessments

- 'Inclusive growth' agenda needs to recognise this

- Examples:

  - additional cost of delivering business advice services across large rural geography

  - additional cost of providing accessible training opportunities in rural areas (with providers targeting centres of population) and lower take up of apprenticeships compared to urban areas due to long and expensive commutes

  - continuing rural / urban digital connectivity divide

  - higher cost of development on smaller rural housing sites impacting on affordable housing delivery

  - higher upfront development costs and high cost of developing smaller workspace units on a speculative basis (not reflected in rental values) necessitating intervention

UK Competitiveness Index

The UKCI, which was first introduced and published in 2000, provides a benchmarking of the competitiveness of the UK's localities, and is designed to be an integrated measure of competitiveness focusing on both the development and sustainability of businesses and the economic welfare of individuals.

The UKCI is based on a *3-Factor model* which, as shown by Figure 1, consists of a linear framework for analysing competitiveness based on: (1) **input**; (2) **output**; and (3) **outcome** factors. In order to achieve a valid balance between each of the indicators, in terms of their overall significance to the composite index, each of the three measures are given an equal weighting, since it is hypothesised that each will be interrelated and economically bound by the other (Huggins, 2003). The data confirms this showing positive correlation between the three factor indices both at the LEP and Local Authority level.

The individual indices therefore reflect differing approaches to measuring competitiveness. The UKCI **Input Index** captures what Aiginger and Firgo (2017) refer to as *process competitiveness*. This consists of examining the conditions and resources required to compete. The third index, the UKCI **Outcome Index**, captures the influence on the population's welfare and is a measure of *outcome competitiveness* (Aiginger and Firgo, 2017). The UKCI **Output Index** forms an intermediate step. Although, the UKCI Output Index component indices are frequently used as outcome competitiveness

measures, the UKCI uses them to reflect the ability to convert inputs available into economic outputs, but these may not necessarily lead to rising living standards for the population. It is the UKCI Outcome Index which directly examines this to ensure that competitiveness is not being achieved purely on a cost basis and shedding of employment (Malecki, 2017).

Figure 1: The 3 Factor Model Underlying the UK Local Competitiveness Index

Input factors
Economic Activity Rates (working age), *Sept 2019*
Business Start-up Rates per 1,000 Inhabitants, *2018*
Number of Business per 1,000 inhabitants, *2018*
Proportion of Working Age Population with NVQ Level 4+, *Jan-Dec 2017*
Proportion of Knowledge-Based Business, *2018*

Output factors
Gross Value Added per head at current basic prices, *2017*
Productivity - Output per Hour Worked, *2017*
Employment Rates (working age), *Jan-Dec 2017*

Outcome factors
Gross weekly pay (workplace), *2018*
Unemployment rates, *claimant rate average in Jan, Mar, Sep, Dec 2017/18*

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D2N2 is less competitive (UKCI=88.3) than the UK average (UKCI=100)

D2N2 UKCI and component indices

● UKCI 2019 ● Inputs 2019 ● Outputs 2019 ● Outcomes 2019

UK average

88.3 82.5 86.5 96.3

D2N2

UKCI (2019)

Mansfield: 76.6   Min   Max   Rushcliffe: 99.7
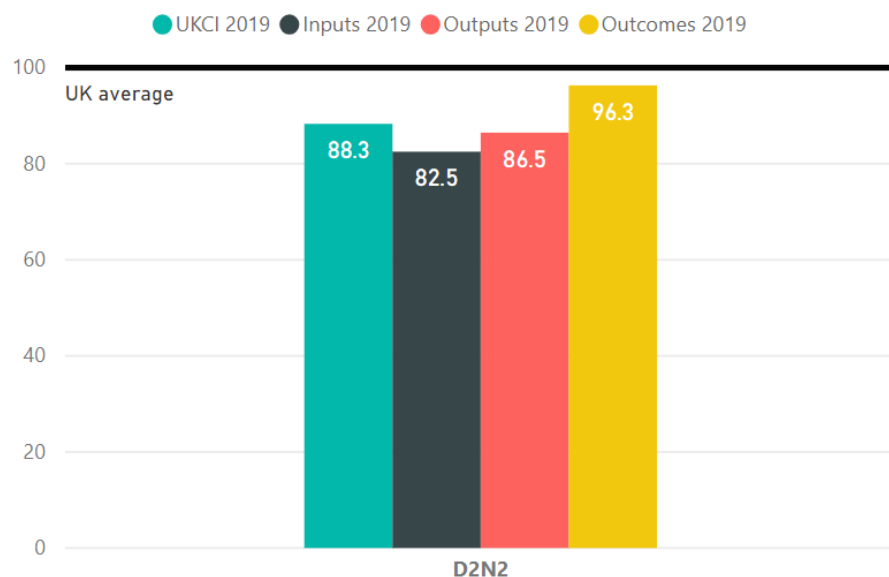
Examination of the constituent indices of the UKCI in 2019 find that D2N2 performs most weakly in terms of the UKCI Input Index and most strongly in UKCI Outcome Index. The overall pattern is therefore of D2N2 having less of the resources needed to compete in the modern knowledge based economy and struggling to retain those that is has, but still being able to utilise those resources present successfully to maintain the welfare of the population.

Note: LA UKCI 2019 ranges from 70.5 to 1047.5 compared to the UK average (100); LEP UKCI ranges from 80.8 to 128.7
Source: D2N2 analysis of 2019 UKCI data, NTU

Index of Multiple Deprivation (IMD)

The Indices of Deprivation (2015) provide a set of relative measures of deprivation for small areas across England, based on seven domains of deprivation. The domains were combined using the following weights to produce the overall Index of Multiple Deprivation (IMD):

Income Deprivation (22.5%), **Employment** Deprivation (22.5%), **Education, Skills and Training** Deprivation (13.5%), **Health** Deprivation and Disability (13.5%), **Crime** (9.3%), **Barriers** to Housing and Services (9.3%), **Living Environment** Deprivation (9.3%).   Each of these domains is based on a basket of indicators. The weights were derived from consideration of the academic literature on poverty and deprivation, as well as consideration of the levels of robustness of the indicators.

Income Deprivation domain measures the proportion of the population experiencing deprivation relating to low income. The definition of low income used includes both those people that are out-of-work, and those that are in work but who have low earnings (and who satisfy the respective means tests).

Employment Deprivation domain measures the proportion of the working age population in an area involuntarily excluded from the labour market. This includes people who would like to work but are unable to do so due to unemployment, sickness or disability, or caring responsibilities.

Education, Skills and Training Deprivation domain measures the lack of attainment and skills in the local population. The indicators fall into two sub-domains: one relating to children and young people and one relating to adult skills.

Health Deprivation and Disability domain measures the risk of premature death and the impairment of quality of life through poor physical or mental health. The domain measures morbidity, disability and premature mortality but not aspects of behaviour or environment that may be predictive of future health deprivation.

Crime domain measures the risk of personal and material victimisation at local level.

Barriers to Housing and Services domain measures the physical and financial accessibility of housing and local services. The indicators fall into two sub-domains: 'geographical barriers', which relate to the physical proximity of local services, and 'wider barriers' which includes issues relating to access to housing such as affordability and homelessness.

Living Environment domain measures the quality of the local environment. The indicators fall into two sub-domains. The 'indoors' living environment measures the quality of housing; while the 'outdoors' living environment contains measures of air quality and road traffic accidents.

Index of Multiple Deprivation (IMD)

Index of Multiple Deprivation

Nottingham: 8   Min   Max   Rushcliffe: 319
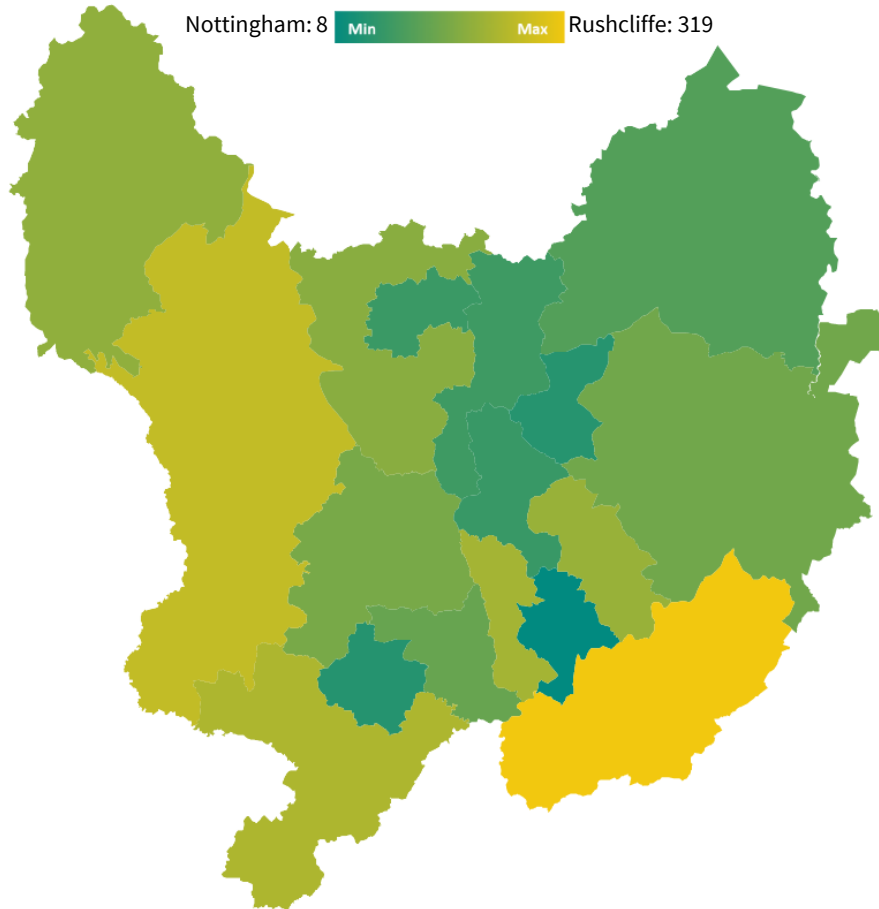
D2N2 LEP **ranked 14th most deprived** out of a total of 39 LEP's across England in 2015.

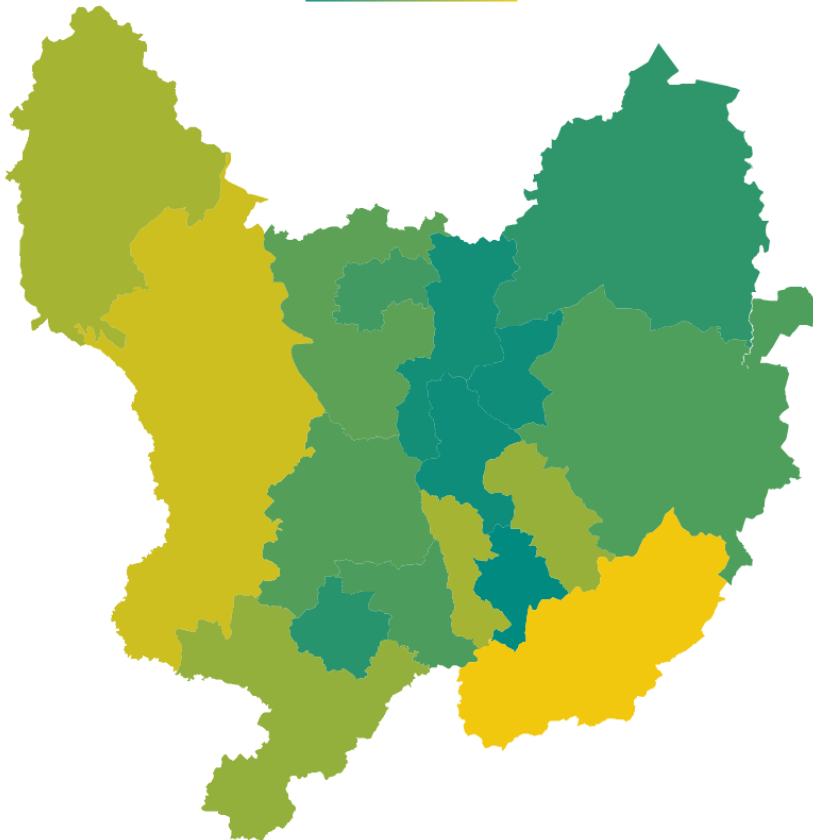10% of D2N2's LSOAs fall within the most deprived 10% across England (DfE, 2017).

Note: Scored from 1 (most deprived) to 326 (least deprived) **Source**: English Indices of Deprivation 2015, DCLG

Derby

National Deprivation Quintile
(Based on IMD2015 scores by LSOAs)
- 1 (Most Deprived)
- 2
- 3
- 4
- 5 (Least Deprived)

Ashley King (17/08/2017)
Principal PH Analyst

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2017. Ordnance Survey 100023251
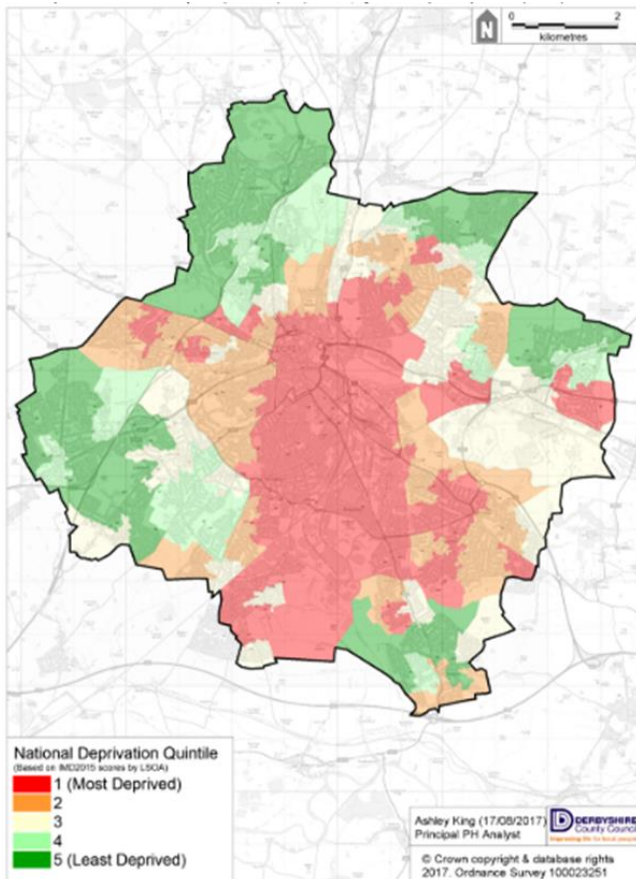
Derby is ranked 61 of the 152 upper-tier authorities (DCLG, 2015). Although Derby performed better in IMD index than its neighbouring LA Nottingham, it is not free from severe deprivation. The most deprived Wards (shaded red) were predominantly surrounding the city centre (which is also true for the majority of the other LAs), namely Sinfin, Normanton, Alvaston and Arboretum.

On the other hand, green shaded areas in the most Northern, Southern, Eastern, and Westerly wards had been appeared to be less deprived in Derby, notably Mickleover, Littleover, Allestree, Oakwood, and some parts of Chellaston and Spondon. The key areas in which Derby has fallen behind were as follows:

- 21% of children were living in low income families in Derby. This was much higher than East Midlands (16.6%) and England (17%) averages (ONS, 2016);

- 13% of households experiencing fuel poverty whereas the East Midlands and England averages were just over 11% (BEIS, 2016).

- The number of people accepted as being homeless and in priority need per 1000 households were almost double (4.5) than the East Midlands (2.3) and England (2.4) averages (MHCLG, 2018).

It appears that the areas with extreme deprivation perform badly in various socio-economic indicators, such as earnings, house prices, school performance, and skill levels and vice versa
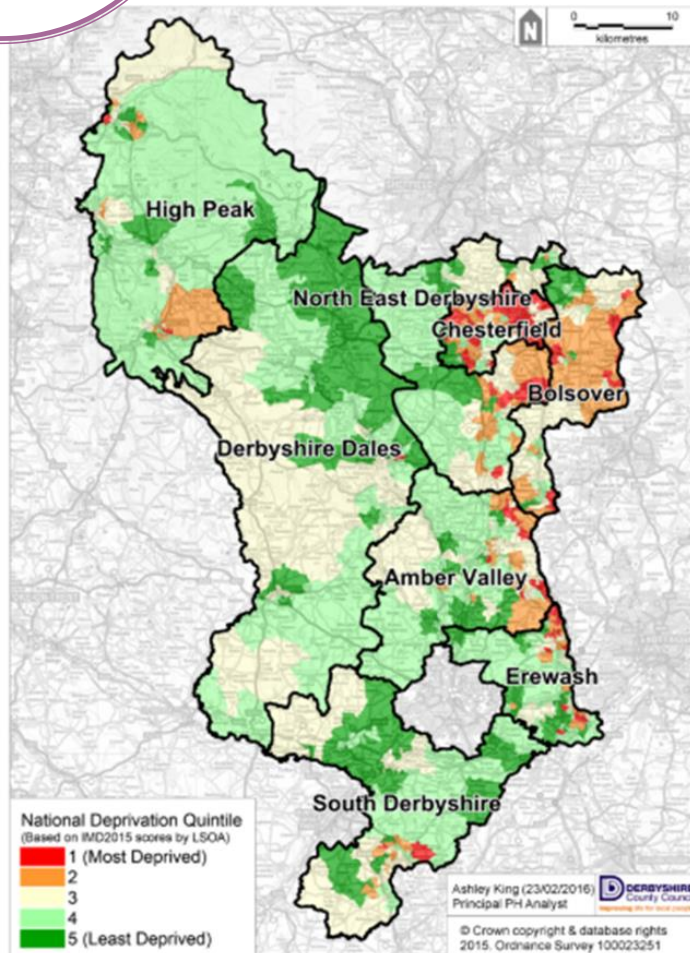
Derbyshire

Derbyshire ranked 100 in 152 upper-tier authorities. It is second lowest in deprived areas in the D2N2 just after Nottinghamshire, which is seen sporadically with red on the map to the left is noticeable that most part of the North-West of Derbyshire comprises the least deprived Wards. The most deprived LSOA within Derbyshire, Hopewell North, lies within Ilkeston North Ward and covers part of the Cotmanhay area. It ranks within the top 1% most deprived areas in England. The key areas in which Derbyshire has fallen behind were as follows:

- A total of 12.2% (60) LSOAs in Derbyshire fall within the most deprived 20% nationally. The greatest levels of deprivation were in Bolsover and Chesterfield.

- There are 3.7% (18) LSOAs in Derbyshire in the most deprived 10% nationally.

Nottingham

National Rank of Lower Super Output Areas

- Most deprived 10%
- 10-20%
- 20-40%
- 40-60%
- 60-80%
- 80-100%

- Nottingham ranked 8th out of the 326 districts in England using the average score measure. It is also fourth most deprived of the Core Cities after Liverpool (4th), Manchester (5th) and Birmingham (7th).

- On the map to the left, dark brown areas represent the 10% most deprived in England which is a third (61) of the 182 Nottingham Lower Super Output Ares (LSOA).

- The most deprived wards were Bulwell, Aspley, Bilborough and St Ann's. Amongst them all LSOAs of Aspley ranked in the 10% most deprived in the country.

Source: People and Skills data Analysis Pack, University of Derby, 2019

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Places:
Deprivation

Nottinghamshire
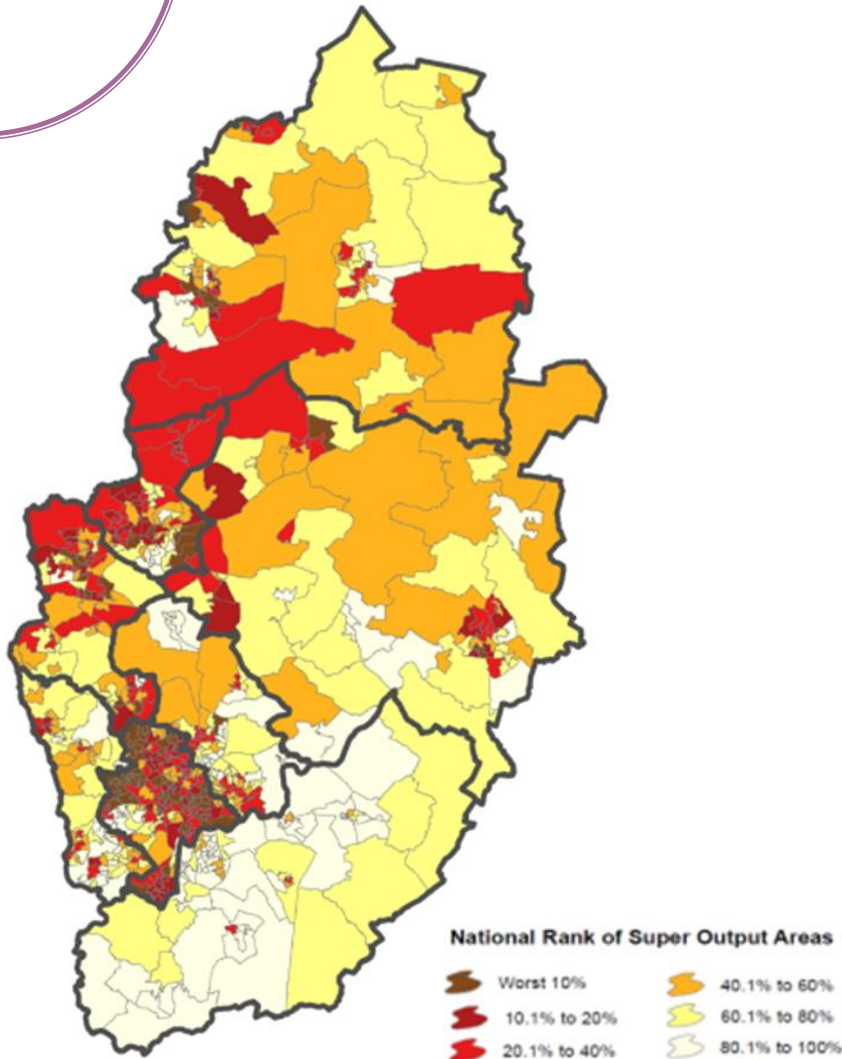
According to IMD (2015), Nottinghamshire was the best upper tier performing local authority in D2N2 that ranked 103. There are 25 LSOAs which were in the 10% most deprived LSOAs in England. The most deprived LSOAs tend to be in the South that are concentrated in the districts of Ashfield, Mansfield, Bassetlaw and Newark & Sherwood.

National Rank of Super Output Areas

- Worst 10%
- 10.1% to 20%
- 20.1% to 40%
- 40.1% to 60%
- 60.1% to 80%
- 80.1% to 100%

Index of Multiple Deprivation:
Income and Employment

Income Deprivation

Nottingham: 14 Min ⟶ Max Rushcliffe: 299
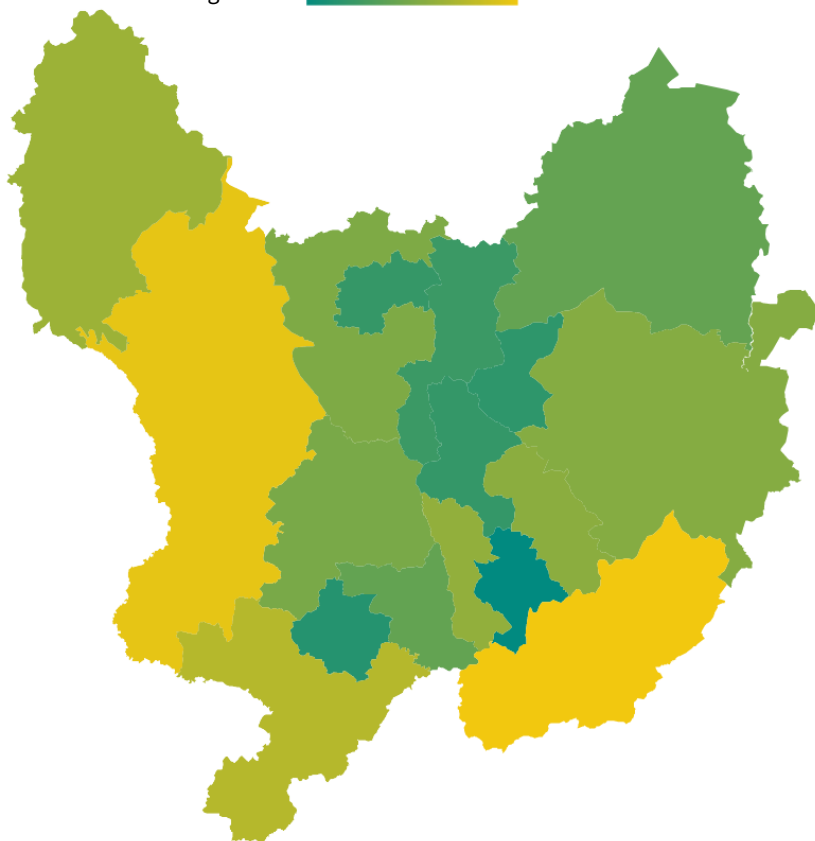
Employment Deprivation

Nottingham: 41 Min ⟶ Max Rushcliffe: 285

Note: Scored from 1 (most deprived) to 326 (least deprived) **Source:** English Indices of Deprivation 2015, DCLG

Index of Multiple Deprivation:
Education and Health

Education, Skills and Training Deprivation

Nottingham: 6 Min — Max Rushcliffe: 322

Health Deprivation and Disability

Nottingham: 19 Min — Max Rushcliffe: 294

Note: Scored from 1 (most deprived) to 326 (least deprived) Source: English Indices of Deprivation 2015, DCLG

Index of Multiple Deprivation:

Barriers to Housing and Services and Living Environment

Barriers to Housing and Services

Nottingham: 42 | Min — Max | Bolsover: 299
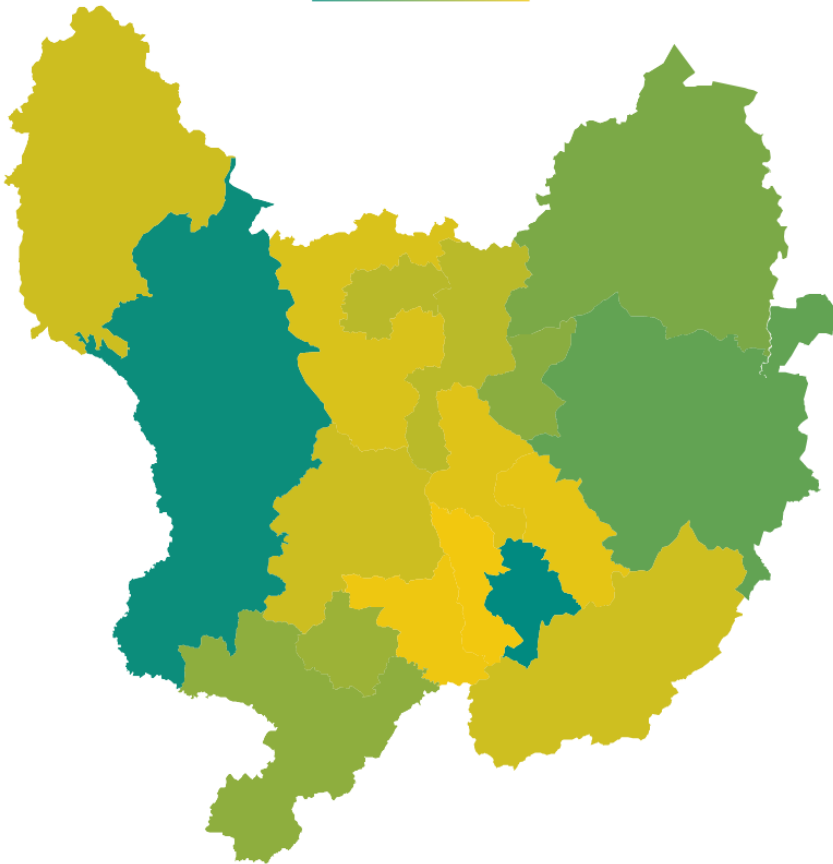
Living Environment Quality

Nottingham: 42 | Min — Max | Rushcliffe: 299
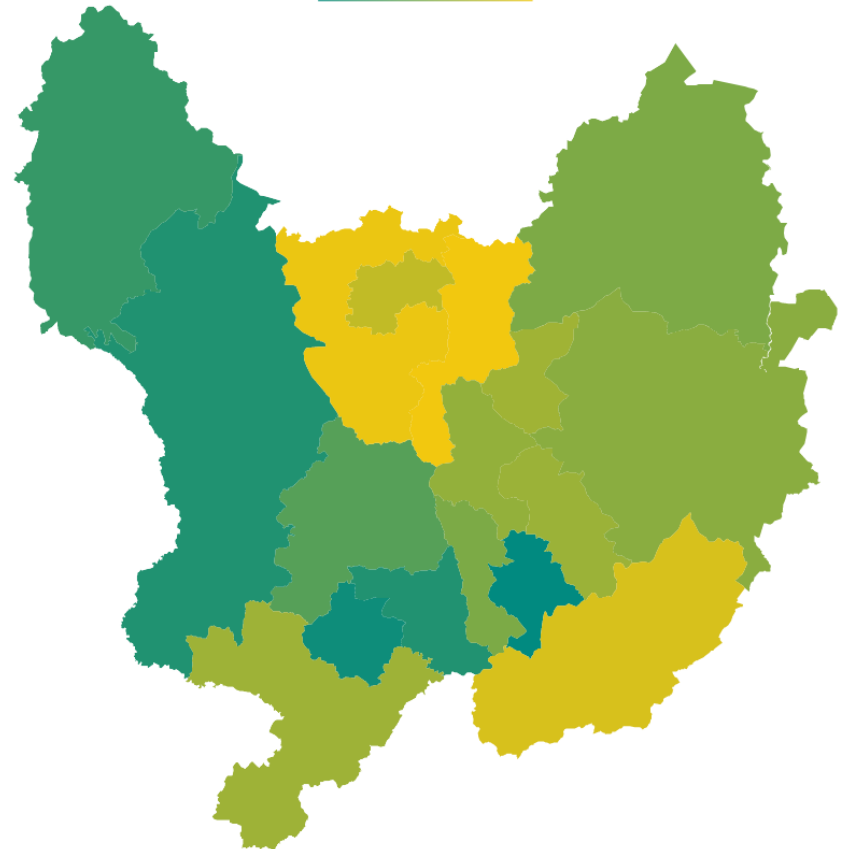
Note: Scored from 1 (most deprived) to 326 (least deprived) **Source:** English Indices of Deprivation 2015, DCLG

Grand Challenge: Clean Growth

- SWOT analysis
- CO2 emissions by end-user groups
- CO2 sinks
- Energy demand and renewable energy generation
- Carbon Budget
- Energy and low carbon economy estimates
- Innovate UK energy-related awards
- Research assets and strengths

HMG Missions

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

At least halve the energy use of new buildings by 2030

Clean Growth

Strengths, Weaknesses, Opportunities & Threats

Strengths

- Highest contributions towards the national Low Carbon economy in East Midlands.
- Research strengths in Environmental Sciences and Renewable Energy, Sustainability and the Environment.
- Research assets and demonstrators

Weaknesses

- High CO_2 emissions per capita due to significant concentration of energy intensive industries, especially in Derbyshire
- High manufacturing concentration makes the transition to cleaner fuel sources more challenging

Opportunities

- Development of a decarbonisation cluster using existing assets and low carbon businesses
- PV and wind renewable electricity generation sets the region up for increases usage of these two technologies, given our research base strengths and expected national growth of 39% in solar and wind technologies
- UK planning to invest 265m into electricity storage technologies is an opportunity for D2N2 to utilize the investment in low carbon projects.

Threats

- High proportion (34%) and growth (6%) of transport emissions require a shift towards cleaner mobility.
- Projected electricity demand increase (85% increase from 2010 to 2040) coupled with the closure of remaining coal powered stations will negatively affect D2N2's ability to satisfy the population and industry demand.

Total Carbon Dioxide emissions from direct and indirect energy use across the D2N2 have fallen by 26.6% from 2005 levels, while per capita emissions fell by 32%

CO2 Emissions trend
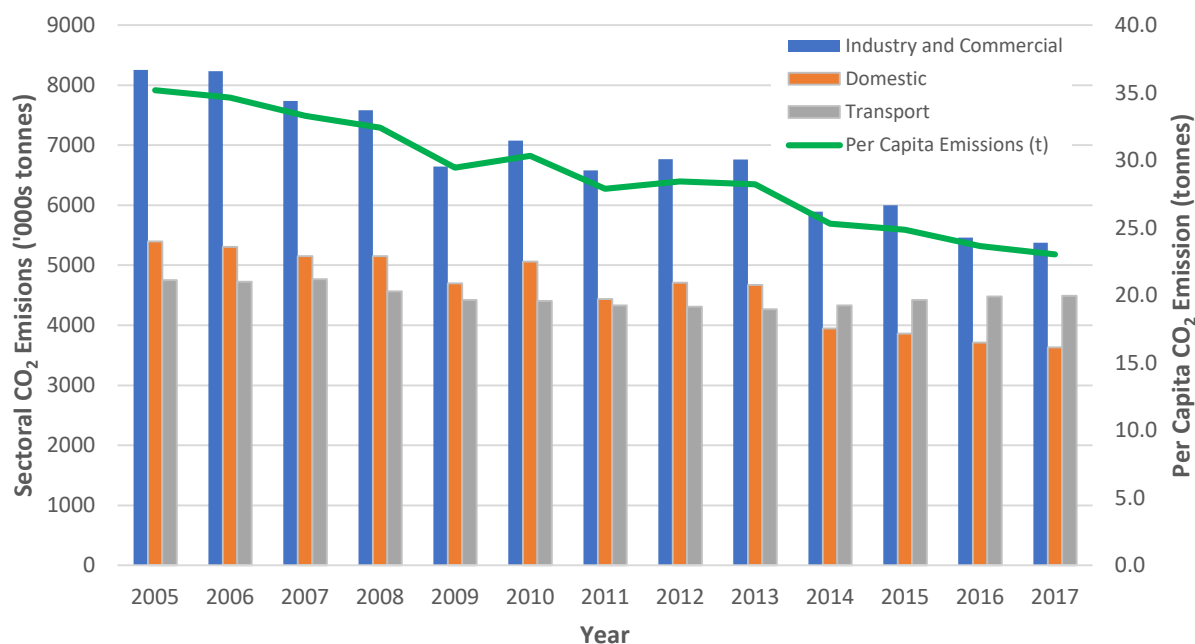
Overall, total CO_2 emissions have reduced by an average of 2.45% annually. However, each sector has seen varied emissions reduction trends over the last 12 year period. Transport emissions have reduced by just 0.45% per year, whilst Domestic emissions have reduced 3.02% and Industry and Commercial by 3.33% annually.

The two cities tend to have the largest total emissions with a relatively equal mix across the three sectors and are home to the largest domestic sector emissions - coinciding with the larger populations living within them.

CO2 Emissions by LA

Transport

Domestic

Industry and Commercial

X-axis: 0, 200, 400, 600, 800, 1,000, 1,200, 1,400, 1,600

2017 Carbon Dioxide Emissions ('000s tonnes)

Y-axis (top to bottom): Rushcliffe, Newark and Sherwood, Mansfield, Gedling, Broxtowe, Bassetlaw, Ashfield, Nottingham, South Derbyshire, North East Derbyshire, High Peak, Erewash, Derbyshire Dales, Chesterfield, Bolsover, Amber Valley, Derby

Transport and Industry/Commercial emissions are a lot more varied amongst the different LAs. The Transport sector is the largest emitting sector for nine LAs, where the largest emissions come from Newark and Sherwood. Industry and Commercial emissions are dominated by High Peak, almost three times higher than the second highest LA, Bolsover, and over nine times higher than either of the two other sectors in High Peak

All end-users exceed national averages of emissions per head.

Emissions per head difference

<div>

34%
Industry

8%
Transport

5%
Domestic

</div>

2017 Emissions by Source

D2N2 CO_2 emissions per head by end-user group
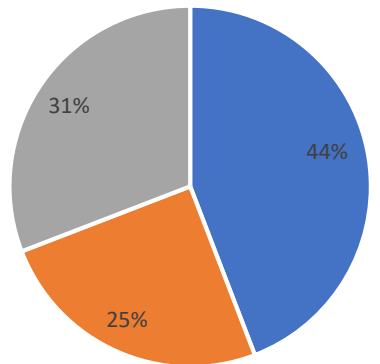
- Industry and Commercial Total
- Domestic Total
- Transport Total

Legend: ■ D2N2 ■ UK ● Percen difference

Pie chart values: 44%, 25%, 31%

Bar chart values:
- Industry: 2.9 (D2N2), 2.2 (UK), 34%
- Domestic: 1.7 (D2N2), 1.6 (UK), 8%
- Transport: 2.0 (D2N2), 2.0 (UK), 5%
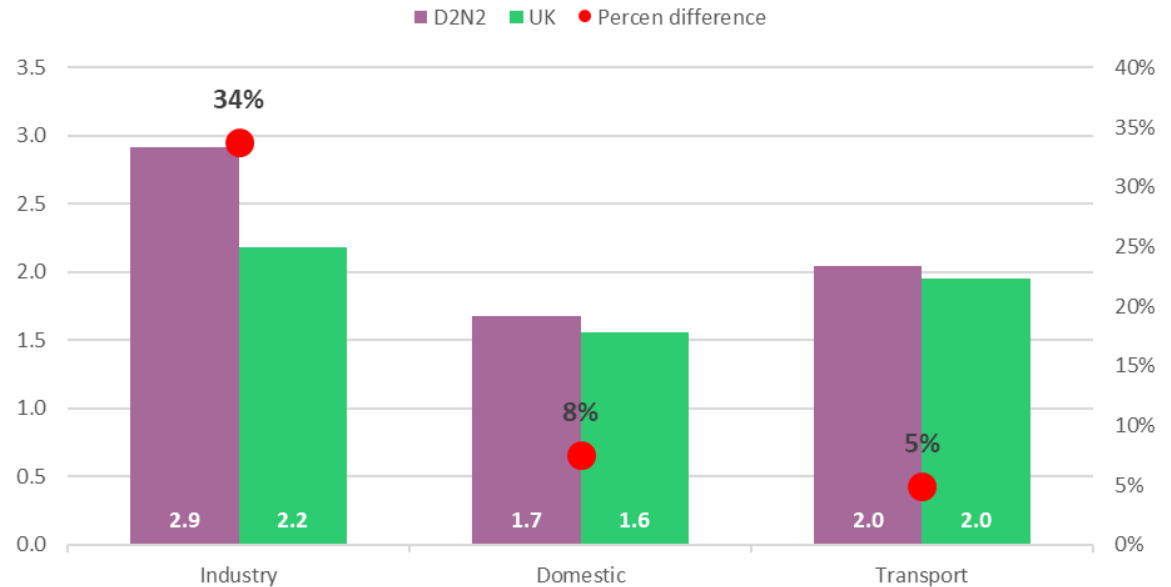
Industry and Commercial emissions contributed 5.4 MtCO2 to D2N2's CO2 emissions in 2017.

2017 Industry and Commercial Emissions

Pie chart legend:
- A. Industry and Commercial Electricity — 23%
- B. Industry and Commercial Gas — 20%
- C. Large Industrial Installations — 45%
- D. Industrial and Commercial Other Fuels — 10%
- E. Agriculture — 2%
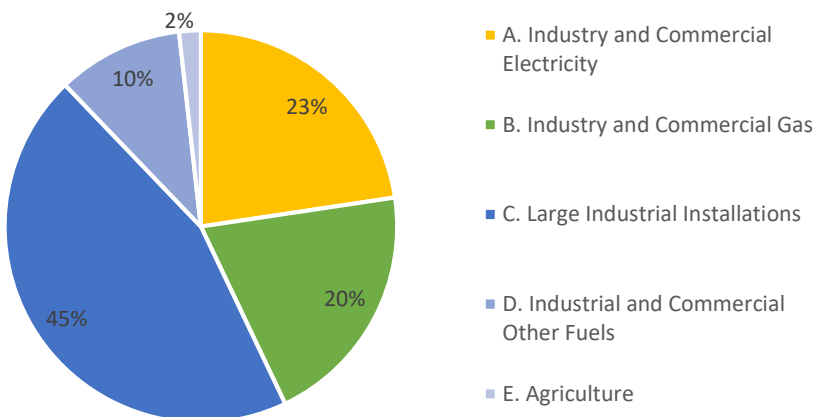
Non-Domestic Housing Stock EPCs								
EPC	A+	A	B	C	D	E	F	G
Percentage of Stock	0.0%	1.4%	7.7%	26.1%	32.7%	18.2%	6.5%	7.2%

D2N2 has an estimated 87,000 business units within the region11 (41% of all units in the East Midlands) of which 22,572 have EPCs available. 13.7% of these are lower than an EPC rating of E and 64.6% are below an EPC C rating. These are below national proportions, where 14.4% of properties are below an EPC rating of E, and 62.6% are below an EPC rating of C.

In D2N2, 48.7% of non-domestic properties use natural gas heating, whilst 46.5% use electricity. Non-domestic properties heated by natural gas are on average 2.7 times larger than those heated by electricity. Specifically, Ashfield, Bolsover, Chesterfield, Erewash, High Peak, Mansfield, NE Derbyshire, and Rushcliffe have over half of their non-domestic properties with EPCs heated by natural gas

Clean Growth: Industry and Commercial Emissions

EU ETS emissions

Region	Emissions
Bassetlaw	2,153,343
Newark and Sherwood	780,498
Rushcliffe	689,538
Derbyshire Dales	289,687
Bolsover	103,319
High Peak	100,961
Nottingham	51,442
Derby	22,370
Gedling	12,657
South Derbyshire	11,249
Erewash	8,150
chesterfield	3,019
Mansfield	2,086
Ashfield	1,528
Amber Valley	506

The installations classified as 'major power producers' are 6 of the highest emitting sites in the D2N2 area, and all but one of these are in Bassetlaw. The remaining sectors in the highest 10 emitting installations are 'cement' and 'lime' works. The top 10 for highest emitting sites covers all the installations of each of these sectors, and the remainder of the 36 installations is composed of other sectors.

Sector	Number of installations	2017 tCO2
Major power producers	6	3,553,170
Cement	1	282,503
Lime	3	192,745
Food, drink & tobacco industry	5	53,894
Other mineral industries	7	39,506
Vehicles	4	27,570
Waste collection, treatment & disposal	1	19,857
Public administration	5	19,596
Chemical industry	1	14,580
Minor power producers	7	11,512
Non-ferrous metal industries	1	7,182
Paper, printing & publishing industries	2	6,310
Processing & distribution of natural gas	1	954
Textiles, clothing, leather & footwear	1	942
Iron & steel industries	1	32
Grand Total	**46**	**4,230,353**

November 2019

Source: EU ETS data. Nottingham City Council Energy Services

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Transport emissions equated to 4.5 MtCO$_2$ in 2017, making it the second highest sector for emissions.

2017 Transport Emissions

- I. Road Transport (A roads)
- J. Road Transport (Motorways)
- K. Road Transport (Minor roads)
- L. Diesel Railways
- M. Transport Other

1%
3%
30%
50%
16%

Since 2009, there has been a 13% increase in the number of vehicles registered in the D2N2 area to 1.3 million registered vehicles. Notably, diesel cars and vans make up 45% of all vehicles registered in the region, and the combined number of these has increased by 54% since 2009 (65% increase in diesel cars).

There are only 5897 ULEVs within the D2N2 area, less than 0.5% of the total number of vehicles. 21% of these ULEVs are registered in Derby, 12.2% in Chesterfield, and 9.8% in Nottingham. These three authorities, with Erewash, are the only authorities in the region with more than 0.5% of registered vehicles as ULEVs.

Road miles in the D2N2 area account for 3.6% of the total miles driven in Great Britain in 2018, and this proportion has remained constant since 2009. However, traffic road miles have increased by 6% in the D2N2, with the largest increase in Nottinghamshire (8.5%), followed by the Derbyshire (6%).

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Domestic emissions accounted for 3.6 MtCO$_2$ in 2017, the lowest of the three main sectors.

2017 Domestic Emissions

- F. Domestic Electricity
- G. Domestic Gas
- H. Domestic 'Other Fuels'
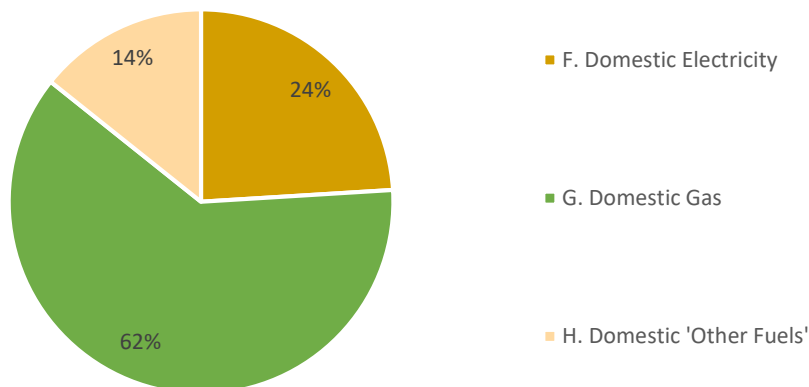
The D2N2 area has an estimated 952,000 domestic properties within it, of which 56.9% have had an EPC assessment (see table below). Based on using these EPCs as an indicator for the whole D2N2 region, 61.8% of domestic properties are lower than an EPC rating of C. This is slightly lower than the national proportion (62.2%).

For every LA within D2N2, 80-90% of properties are heated by mains gas (88.5% for the whole of D2N2) and the spread of EPCs across local authorities have similar proportional splits

Domestic Housing Stock EPCs							
EPC	A	B	C	D	E	F	G
Percentage of Stock	0.2%	10.0%	28.1%	39.7%	17.4%	3.9%	0.8%

Domestic emissions and fuel poverty

When considering how to improve domestic building energy efficiency, particularly those for the highest 1% of carbon emitters, it should be noted that some of these overlap with areas with high levels of fuel poverty.

LSOAs: Fuel poverty and High Emissions
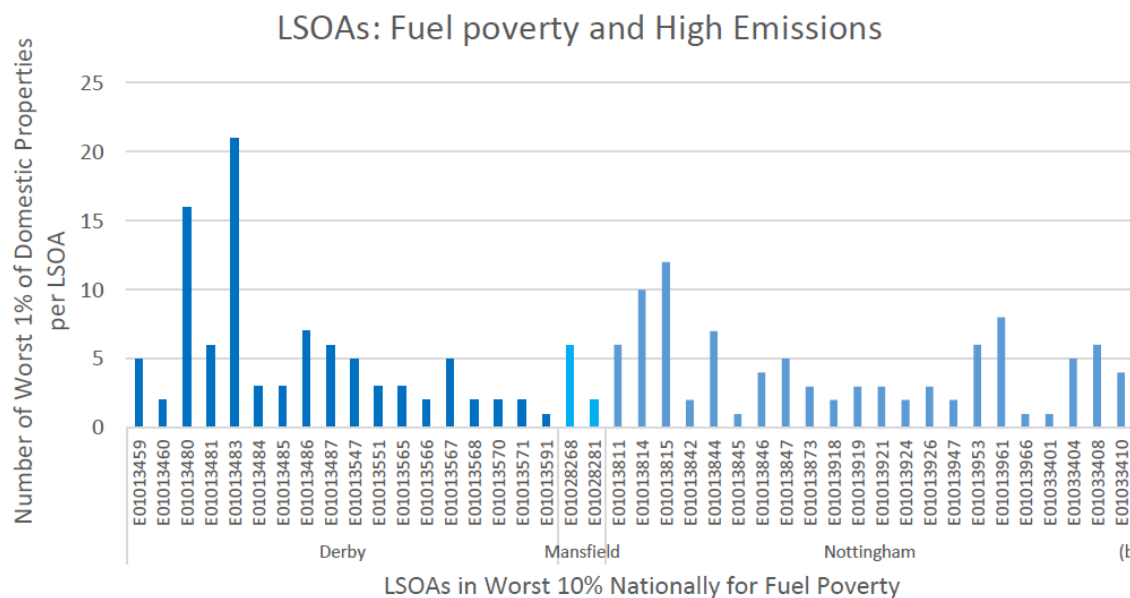
Comparing LSOAs with the highest proportion of fuel-poor household with the worst 1% of domestic property emitters shows 94 domestic properties in Derby, 8 in Mansfield, and 96 in Nottingham are in LSOAs, which are in the top 10% nationally for greatest proportion of fuel poor households. Both environmental and economic impact on these properties should be recognized when considering the effects of policies. The properties here account for 3,919.9 tCO2 per year, and retrofitting these as a priority may have added economic benefits for deprived areas.

A total (net) of 158 ktCO2 was sequestered through land use, land-use change, and forestry (LULUCF).

UK: Comparative Size of Carbon Sinks
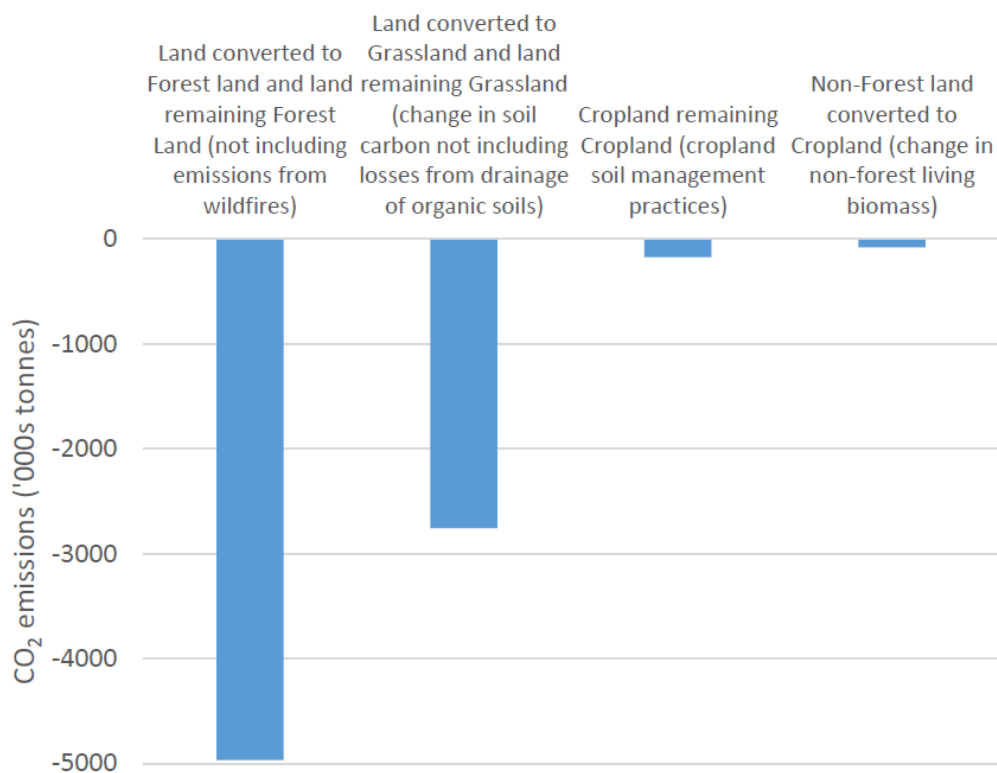
At a UK level, the greatest carbon removal comes as a result of forest growth and land converted to grasslands.

Local Authorities are very varied in their LULUCF emissions. Newark and Sherwood, North East Derbyshire, High Peak and Derbyshire Dales account for 62% of D2N2s LULUCF emissions. All local authorities within D2N2 had a net removal of carbon through LULUCF activities in 2017, except Bassetlaw which had positive emissions.

A total (net) of 158 ktCO2 was sequestered through land use, land-use change, and forestry (LULUCF).

Woodland has been considered at county scale for Derbyshire and Nottinghamshire. Using the national forest inventory (1998) woodlands of over 0.1ha account for 7.4% of the total area for Derbyshire, and 8.0% of total area for Nottinghamshire. This is slightly below the coverage for all of England, of 8.4%

	Number of woodlands >0.1 hectares	Woodland proportion of total area (includes inland water)
Derbyshire	19,513	7.4%
Nottinghamshire	17,298	8.0%

Total Woodland Area for Different Sized Woodlands

Contains British Geological Survey materials ©UKRI [2019]

Orange highlights peatland deposits
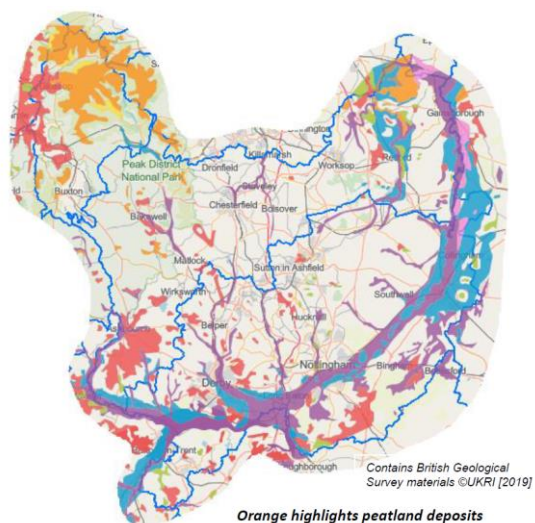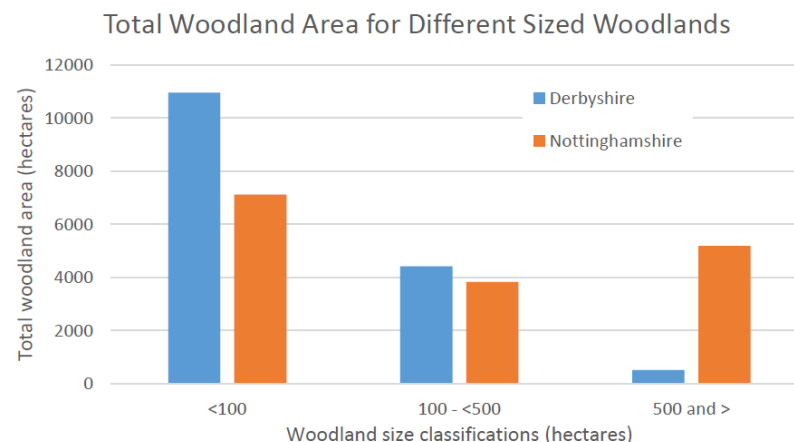
Peat deposits are shown in orange on the map. It is estimated peat within D2N2 covers approximately 190km2; concentrated in the northern Peak District National Park, with some smaller areas in the south of the national park, and an area to the north west of Gainsborough. For the parts of the peat estimated to be in D2N2, this is estimated to sequester up to 66 ktCO2e per year.

Energy demand in the D2N2 area has **decreased by 15%** since 2005

2017 D2N2 Energy Demand by Fuel Type

Legend:
- Coal
- Manufactured fuels
- Petroleum products
- Gas
- Electricity
- Bioenergy & Wastes

Pie chart values: 4% (Coal), 1% (Manufactured fuels), 36% (Petroleum products), 37% (Gas), 18% (Electricity), 4% (Bioenergy & Wastes)
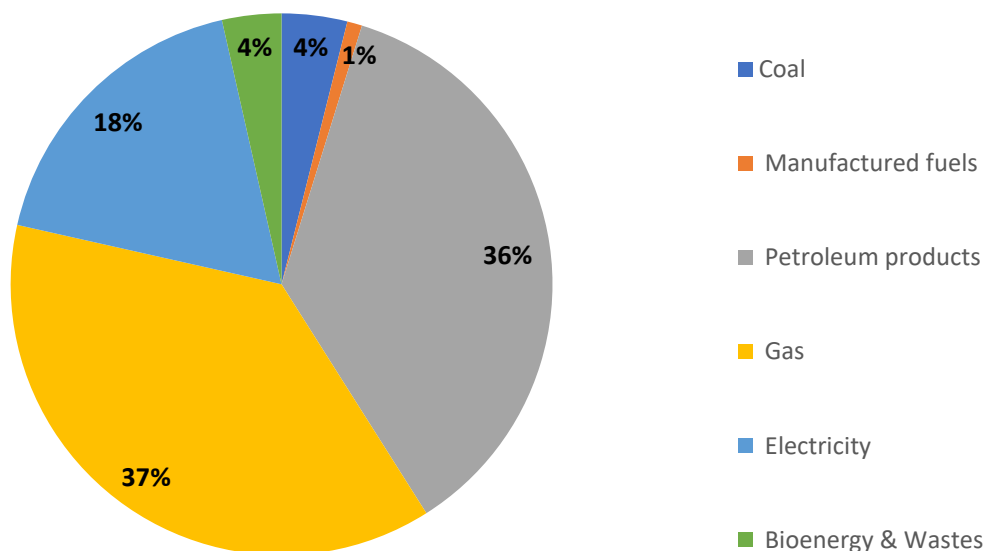
Overall, gas demand has decreased by 23.6% and electricity demand has reduced by 15.9%. However, in 2017, gas consumption still accounts for 37.5% of the total energy demand (split 63.2% for domestic use and 36.8% for industry and commercial use). Though Domestic, and Industry and Commercial sectors' energy consumption is decreasing, their gas use accounts for over a third of total energy consumption in D2N2.

Estimates suggest that 2.95% of total energy consumption in D2N2 is from low carbon generation

Total Installed Capacity (MW)

	Solar	Wind	Hydro	Anaerobic D	RHI	Total
Derby	14.9	5.0	0.2			20.2
Derbyshire						
Amber Valley	8.2	4.8			8.0	21.0
Bolsover	6.4	1.4			2.0	9.8
Chesterfield	16.5	0.5				17.0
Derbyshire Dales	8.5	1.9	0.5	0.1	16.0	27.1
Erewash	7.1					7.2
High Peak	4.3		0.3		2.0	6.7
North East Derbyshire	13.8	0.8		0.2	6.0	20.8
South Derbyshire	16.3	0.2			16.0	32.5
Nottingham	21.1				3.0	24.1
Nottinghamshire						
Ashfield	8.7	0.7			4.0	13.3
Bassetlaw	27.9	2.8		4.1	82.0	116.7
Broxtowe	6.7	2.6			1.0	10.2
Gedling	7.2	3.8	0.5	5.6	3.0	20.2
Mansfield	8.2			0.4	6.0	14.6
Newark and Sherwood	28.0	8.7		3.0	25.0	64.6
Rushcliffe	29.6			1.5	19.0	50.2
Total	**233.5**	**33.0**	**1.6**	**14.9**	**193.0**	**476.1**

When transport consumption is excluded, 4.11% is from low carbon generation. It is estimated 13.94% of electricity consumption in D2N2 is from low carbon energy generation.

The D2N2 region is home to over 952,000 households (3.4% of UK total), of which 4.1% have Solar PV installed. Meanwhile, non-domestic solar installations have an installed capacity of 96 MW. The D2N2 area has 4.6% of UK solar installed capacity. Whilst solar is the most prominent type of renewable technology within the D2N2 area, there are also 135 wind installations (total 33 MW of capacity), 17 hydroelectric installations (1.6 MW) and 16 anaerobic digestion sites (14.9 MW).

Overall, the D2N2 region has 283 MW installed Feed In Tariffs (FIT) capacity of renewable energy, accounting to 4.5% of the UK capacity.

In addition, there also 620 non-domestic Renewable Heat Incentive (RHI) installations with a capacity of 193 MW, which is 3.9% of the UK total.

D2N2 business-as-usual scenario is likely to follow a 2% reduction trend while the recommended carbon budget in line with the Paris Agreement would require annual emission reduction rates in excess of 14%.
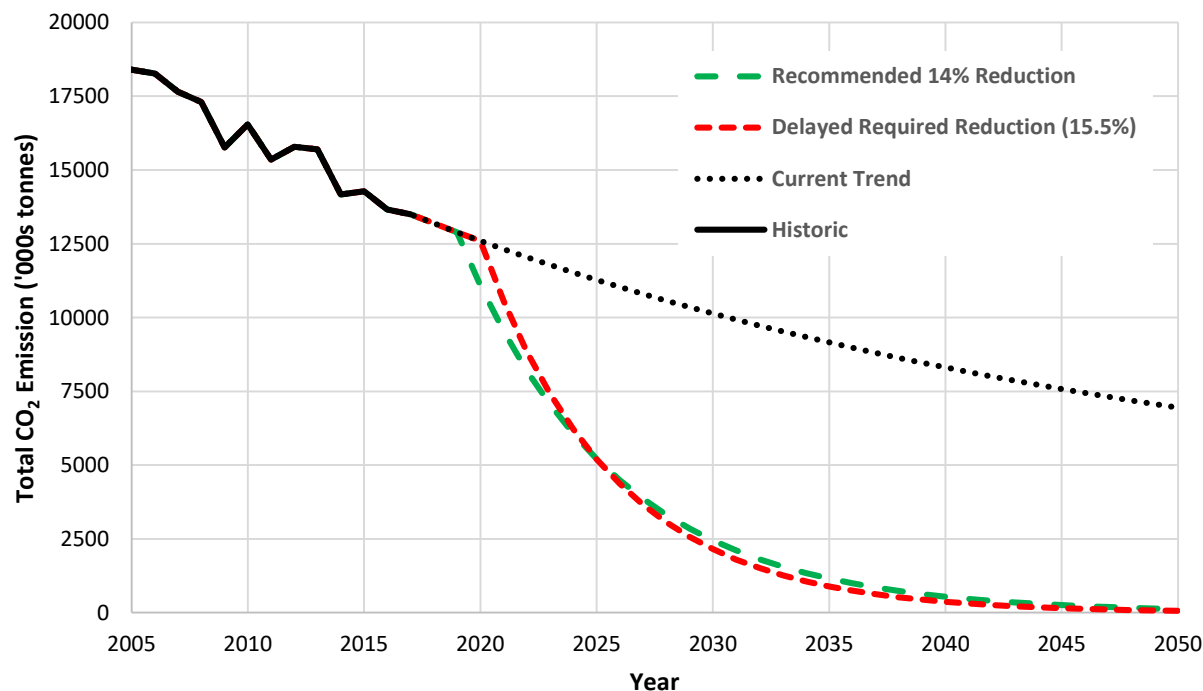
The Tyndall Centre, University of Manchester, has developed a process to downscale the global carbon budget to local authority areas, which is in line with keeping global temperatures well below 2oC and pursuant of a 1.5oC limit to global temperature rise. Based on these methodologies, the D2N2 area is recommended to keep its cumulative emissions between 2020 and 2100 below 81.3 MtCO2. To put this in context, the total cumulative CO2 emissions between 2005 and 2017 were 206 MtCO2, over 2.5 times higher than the remaining carbon budget for the next 80 years.

D2N2 low carbon economy ranks 5th among LEPs.

£3.92bn
Total Sales

1,556
Total Companies

28,716
Total Employment

Sales and Companies in Low Carbon Economy

Legend: ■ Companies ● Sales £m
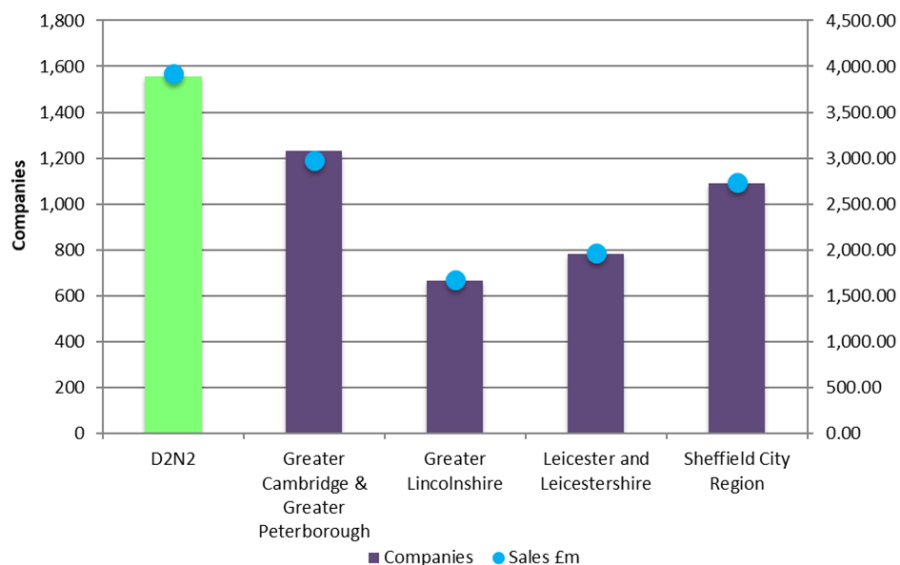
Employment in Low Carbon Economy

Source: Low carbon economy estimates, 2012
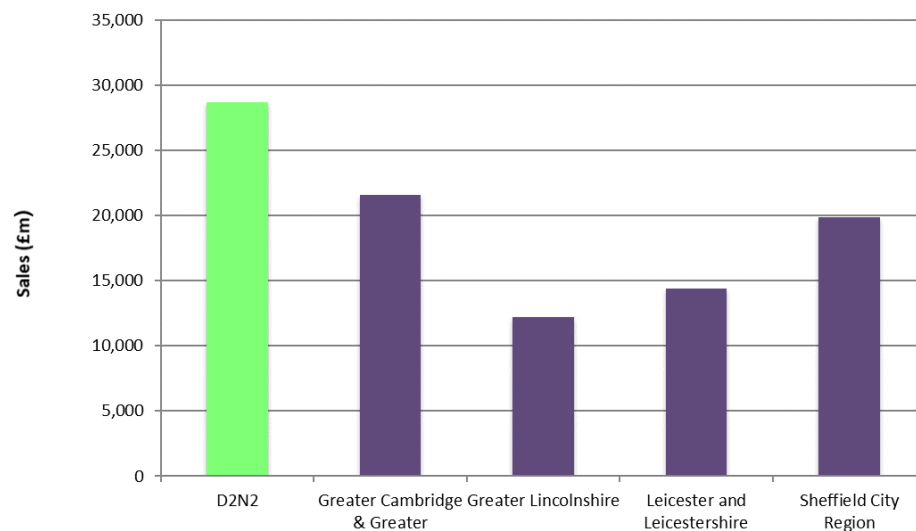
Energy related grants are 14.5 times higher than average.

Average = 1

Grants Offered by Innovate UK[5]

Category	Value
Advanced Materials	3.37
Aerospace	0.70
Agri Tech	0.20
Biosciences	0.39
Built Environment	0.00
Development	0.61
Digital Services	0.86
Electronics, Photonics & Electrical Systems	1.11
Emerging Technologies	0.82
Energy	14.54
Food Supply	2.15
Healthcare	0.87
High Value Manufacturing	1.83
Information & Communication Technology	0.00
Infrastructure	0.89
Life Science	1.13
Materials & Manufacturing	2.91
Space	2.42
Sustainability	2.31
Transport	1.15
Urban Living	0.29

5. Figures are for March 2014 to March 2018 and were extracted on 22nd March 2018 from Innovate UK's website.

Clean Growth: Research strengths

Higher than average research quality in **Renewable Energy, Sustainability and the Environment, and Environmental Science, Fuel Technology, Energy Engineering and Power Technology, and Environmental Science**

Radar chart comparing D2N2, UK and Global average across: Renewable Energy, Sustainability and the Environment; Fuel Technology; Energy; Energy Engineering and Power Technology; Environmental Science; General Energy; Chemical Engineering; Engineering; Energy (miscellaneous).

— D2N2   - - - UK   — Global average

Corporate collaboration (number of co-authored publications)

- E.ON – 5
- EDF – 3
- Siemens – 3
- Guangdong Power Grid Corporation – 2
- Petrobras – 2

Research Excellence Framework (REF)

UK ranking by research power

- **Chemistry**: Nottingham (10)
- **General Engineering**: Nottingham (3)
- **Geography, Environmental Studies and Archaeology**: Nottingham (8)

Witty Review

Institutions ranked in the top 20 in the UK for their field weighted citation impact:

- **Nuclear**: Nottingham (2)
- **Oil and gas**: Nottingham (19)
- **Offshore wind**: Nottingham (7)
- **Energy Storage**: Nottingham (4)

Assets & research base

- **The British Geological Survey** (BGS) is a world leading geological survey and the UK's premier provider of authoritative geoscientific data and knowledge for wealth creation, sustainable use of natural resources, reducing risk and living with the impacts of environmental change.

- **The Energy Research Accelerator** (ERA) is a cross-disciplinary energy innovation hub which brings together the BGS, the University of Nottingham and five other Midlands HEIs. With initial priorities of Geo-Energy Systems, Integrated Energy Systems and Thermal Energy.

- **The Energy Technologies Research Institute** is a focal point for research and industrial collaborations at the University of Nottingham. Other Nottingham research centres include joint collaborations with BGS on the GeoEnergy Research Centre and Centre for Environmental Geochemistry. The University also hosts the EPSRC Centre for Power Electronics, and the Centre for Doctoral Training in Carbon Capture and Storage and Clean Fossil Energy.

- The University of Derby's **Institute for Innovation in Sustainable Engineering** includes energy and the environment as one of six core themes.

- **The Centre for Energy Innovation** was established at the Health and Safety Laboratory (HSL) in Buxton in 2016. The Centre focuses on enabling the development of innovative energy technologies and has already gained experience in the hydrogen economy, nuclear decommissioning and Liquefied Natural Gas (LNG).

Grand Challenge: Future of Mobility

- SWOT analysis
- Manufacturing ecosystem strengths
- Research & innovation strengths
- Infrastructure, connectivity and low emission transport opportunities

D2N2
Derby
Derbyshire
Nottingham
Nottinghamshire

HMG 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

D2N2
Derby
Derbyshire
Nottingham
Nottinghamshire

Summary

Advances in mobility technologies, have potential to improve productivity through

- reduced travel times and cost
- reduced air pollution and congestion;
- improved access to key services, employment, and education;
- broadened travel horizons and mitigated rural transport poverty;

D2N2 has a robust manufacturing base and a flourishing R&D ecosystem in

- composites, light-weighting, power electronics;
- design and manufacture by Rolls-Royce and Bombardier in light-weighting and electrification of aircraft and rolling stock
- corporate-academic collaboration.

Strengths, Weaknesses, Opportunities & Threats

Strengths

- High concentration of automotive, rail, and aerospace OEMs; robust and specialist supply chain ecosystem and links to suppliers locally and across Europe;
- Academic alliances between industry and internationally competitive HEIs;
- Innovative high-growth SMEs in materials, telematics, advanced manufacturing;
- Integrated and connected public transport and high urban uptake;
- Progressive Derby and Nottingham urban zone partnership and joint bid for Transforming Cities and Future Mobility Zone;
- Deep Academic Alliance with Transport Systems Catapult and links with Midlands Engine;

Weaknesses

- Limited R&D ecosystem for automotive manufacturing; reliance upon multinationals for innovation in manufacturing;
- HEIs underexploited by local businesses;
- Limited graduate retention and low concentration of jobs in professional and technical services; low and inflexible skills base;
- Significant rural-urban divide; low uptake of EVs and ULEVs, and low public transport demand in rural areas; EV charging hubs clustered around conurbations only exacerbate this;
- Low proximity to testbeds in London and South East;

Opportunities

- Light-weighting and electrification in automotive;
- Electric aircraft and micro-mobility in aerospace;
- Light-weighting and efficiency optimisation in rail and locomotive;
- Further funding opportunities via Transforming Cities and Future Mobility Zone;
- Competitive connections with HS2, East Midlands Airport, East Midlands Gateway;
- Coordination between LEPs to support replication of successful programmes for a seamless development of clean growth plans across regions

Threats

- Susceptibility of just-in-time supply chain agility for automotive, rail, and aerospace given Brexit uncertainty
- High dependence of D2N2 economy on manufacturing and low proximity to relevant R&D may limit potential for uptake of new technologies/ access to new markets;
- Competition for funding both regionally and internationally;
- Ageing population and growing urban-rural divide;
- Effects of increasingly strict environmental targets on manufacturing and transportation sectors, including regulations introduced by adjacent areas which could restrict access to markets

Manufacturing ecosystem **strengths**

Robust **automotive** manufacturing ecosystem with a resilient and agile supply chain supporting the presence of a high concentration of automotive OEMs and multinational Toyota, reflected by a regional GVA LQ of 1.7.

- Toyota manufacturing plant in Burnaston, centre of production of Auris Hybrid and Suzuki hybrid models (by end of 2020); situated in the midst of a complex parts and services supply chain extending nationally and within the EU, with many major suppliers within a 10 mile radius operating on a just-in-time basis.

- Innovation in light-weighting and power electronics for electric and hybrid vehicles supported by a flourishing R&D ecosystem in advanced materials, academic alliances with the University of Nottingham and local SMEs in composites (EPM Composites, Cytec, FAR-UK).

D2N2 Derby Derbyshire Nottingham Nottinghamshire

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

Manufacturing ecosystem strengths

Competitive footprint in design and manufacture of **rail and locomotive**; D2N2 comprises 29% of jobs in *Manufacture of Railway Locomotives and Rolling Stock* nationally, with an employment LQ of 9.2, reflective of the presence of the Bombardier manufacturing plant in Derby.

- D2N2 is home to all five members of the Midlands Rail Forum, comprising industries from rolling stock and equipment leasing to data science and cloud consultancy: SNC-Lavalin, Porterbrook, Bombardier, Resonate, and Elastacloud.
- Bombardier, recipient of £112k in IUK grants for research in locomotive performance and efficiency, centre for manufacturing, diagnostic and fleet control, and vehicle refurbishment located in Derby.
- Innovation in light-weighting and rolling stock design supported by proximity of R&D ecosystem.

Aerospace R&D and manufacture hub, with multinational Rolls-Royce Derby HQ accounting for 14,000 jobs in the region.

- Rolls-Royce University Technology Centre in Manufacturing Technology multidisciplinary research group at University of Nottingham exploring all aspects of aerospace manufacture.
- Innovation in light-weighting and electrification exemplified by Rolls-Royce participation in E-Fan X project alongside partners Airbus and Siemens, and ~£35m IUK funding in aerospace 2004-June 2019.
- GVA LQ of 3.4 in *Manufacture of Other Transport Equipment* an 1.6 in *Repair and Installation of Machinery and Equipment*.

Innovation and R&D **strengths**

Internationally celebrated research, academic alliances, knowledge transfer partnerships, and corporate collaboration from the region's three HEIs:

- **University of Nottingham** ranks in the top 15 for aerospace and automotive research; the UoN *Transport, Mobility and Cities* portfolio comprises interdisciplinary research in light-weighting, CAVs, MaaS, urban planning, behavioural economics, smart business models.
  - UoN Deep Academic Alliance with Transport Systems Catapult, and participation in i-Motors and CAPRI consortium research groups in CAVs.
  - 94 Horizon 2020 projects with a total value of €381.4m.

- **Nottingham Trent University** collaboration with Transport Systems Catapult via the IMPART project, assessing intelligent transportation and transport infrastructure solution.

- **University of Derby** Institute for Innovation in Sustainable Engineering is the focal point of academic alliances with Rolls-Royce, Toyota, Bombardier, delivering expertise in additive manufacturing, manufacture software, product development and materials testing offered to facilitate innovative solutions in SMEs;

- 27% of IUK grants (2015-18, SSH data) awarded for projects in advanced materials, high-value manufacturing, transport, and urban living; and 62% in energy.

- Most regional innovation in automotive sector is coming from smaller enterprises and higher education partnerships: 62% of IUK grants in the automotive sector were awarded to HEIs and 26% to micro, small or medium enterprises, 2004-June 2019.

D2N2 scores high on interaction between HEIs and business

Interactions Between HE Institutions & Business[9]

Average = 1

Category	Score
Consultancy Research (SMEs)	1.21
Contract Research (SMEs)	2.85
Consultancy Research (large businesses)	2.24
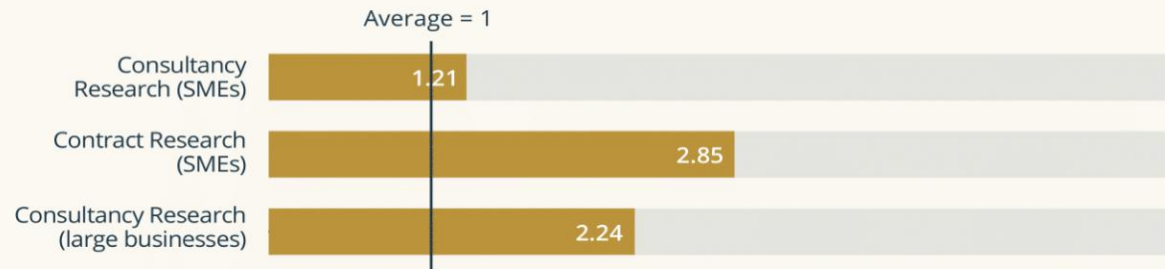
Institution	Co-authored Publications	Institution	Co-authored Publications
JLR	20	Airbus Group	3
Rolls-Royce	18	Ford Motor	3
Network Rail	14	General Motors	3
General Electric	9	BMW Group	2
Alstom	6	Transport Systems Catapult	1
Arup Group	4	Transport Research Laboratory Limited	1

52% of projects and 41% of IUK funding in D2N2 was awarded in Manufacturing, Materials and Mobility. D2N2 ranks 6th by the number of projects.

Grant amount by sector

- AI and data £4M (2%)
- Ageing Society, Health & Nutrition £22M (10%)
- Other £38M (16%)
- Manufacturing & Mobility £94M (41%)
- Clean Growth & Infrastructure £71M (31%)

Number of projects by LEP

LEP	Number of projects
London	1552
Coventry and Warwickshire	550
Greater Cambridge and Greater…	550
Enterprise M3	451
West of England	425
D2N2	391
Leicester and Leicestershire	369
Oxfordshire	349
Solent	327
Sheffield City Region	325
North Eastern	293
Greater Birmingham and Solihull	275
South East Midlands	257
South East	251
Tees Valley	146

Relatively **low electric vehicle uptake** but higher public transport usage in the cities than regionally

Regional EV Uptake 2018
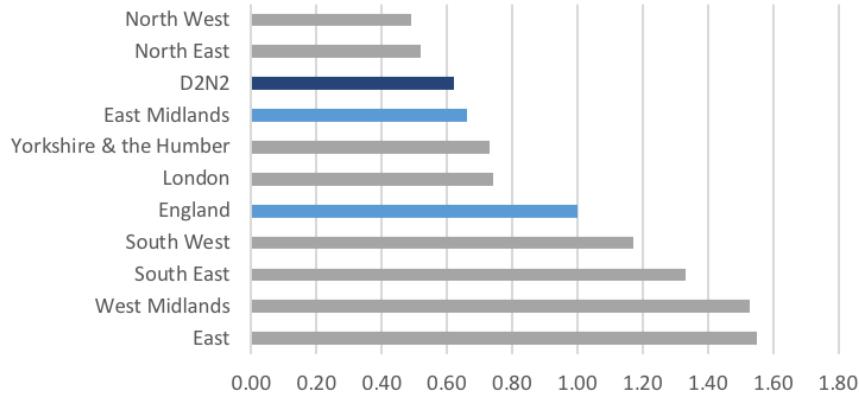
Regional Annual Bus Journeys per Capita 2017/18
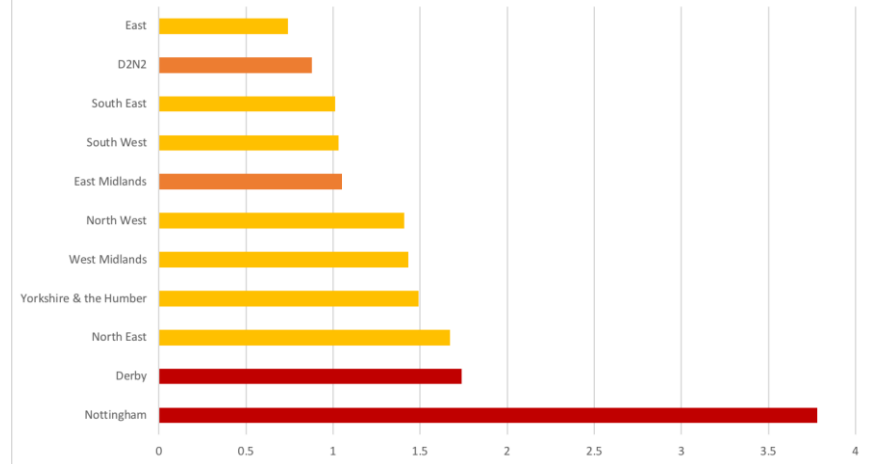
Relatively low regional EV and ULEV uptake, with disparity in access to EV charging points across the urban-rural divide. This divide is further exemplified in bus usage in the region with D2N2 bus journeys per capita regionally below the national benchmark

(excluding London) despite relatively high usage in the Nottingham and Derby conurbations.

Opportunities for improved Nottingham-Derby connectivity and low emissions transport.

Future mobility and urban living development funding opportunities available to Derby and Nottingham as a continuation of the successful joint bid for the **Transforming Cities** fund, awarded **£7.2m** in Tranche 1 funding:

- Cycle route improvements in key growth corridors between Derby and Nottingham
- Cycle hire/ e-bike scheme expansion
- PT information systems upgrades
- Smart PT payments
- Electric charging hubs at East Midlands Gateway and bus and tram P&Rs
- Smart camera and traffic control system trial

Future Mobility Zone bid:

- Open access MaaS platform, putting public sector authorities in a leading role in delivering integrated information and payment services
- Pooled and standardised transport data sharing platform, made available via APIs
- e-Mobility hub scheme, comprising a large-scale V2G demonstrator project in Nottingham, fleet upgrades, and a ULEV corridor

£6.1m awarded by the Office for Low Emission Vehicles for the **Go Ultra Low** Nottingham project:

- Installation of over 200 EV charge-points
- Electric taxi and ULEV lane trial
- Education and engagement initiatives in partnership with local dealerships

Future of Mobility

There are potential threats

- Manufacturing industry inertia in the face of increasingly stringent environmental regulations, with Derbyshire emissions per capita at around 150% of the national average, and industry the primary source of CO_2 emissions in D2N2 (cf. *Clean Growth* strand).
- Brexit uncertainty leading to instability of manufacturing ecosystem; Toyota's Burnaston production plant relies upon a complex EU supply chain, exporting around 90% of products to the EU, with around 80% of vehicles assembled in the UK exported generally.

- An ageing population in the counties threatens to exacerbate the urban-rural divide, making modal shift and uptake of new modes of transport less predictable.
- Low proximity to UK testbeds and competition with the West Midlands for CAV feasibility studies threatens D2N2 access to this growing market.
- Low graduate retention (29% and 22% for UoN and UoD resp. relative to an East Midlands average of 54% (HESA 2016/17)) threatens skills base.

Grand Challenge:
AI and Data

- Impact and opportunities
- Productivity and consumption-driven benefits
- Global AI adoption by sector and business function
- Automation potential
- Risks of automation
- Innovation activity in D2N2

HMG Mission

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

Source:

Summary

AI and Data

- Regional economies need to think broader than AI improving productivity to gain the potential economic growth

- The D2N2 region has focused its innovation activity on advanced manufacturing in general, rather then the underpinning AI and data science that enables step changes in automation

- The regions with the greatest opportunities for automation tend to be in the counties where the economies are based on service, logistics and manufacturing

- These regions could benefit significantly from investment in AI and Data Science

- Work is needed to ensure the capitilisation of investment is greater than the creative destruction of jobs

D2N2
Derby
Derbyshire
Nottingham
Nottinghamshire

UNIVERSITY of DERBY

AI and data have the potential to **increase the value of output by around 12.5%** over the next 10 years.

Accenture and PWC reports suggest the UK economy will see:

- 10.3% increase in GDP over 12 years due to AI – equivalent to 232 Billion
- 25% increase in GVA due to AI over the next 20 years

AI will enhance:

- Productivity
- Quality
- Consumer choice through more personalised and varieties of goods
- Time for high value activities by delegation to AI technologies
- Enhancing and augmenting human capability

Consumption-driven impacts of AI are predicted to exceed productivity-driven gains
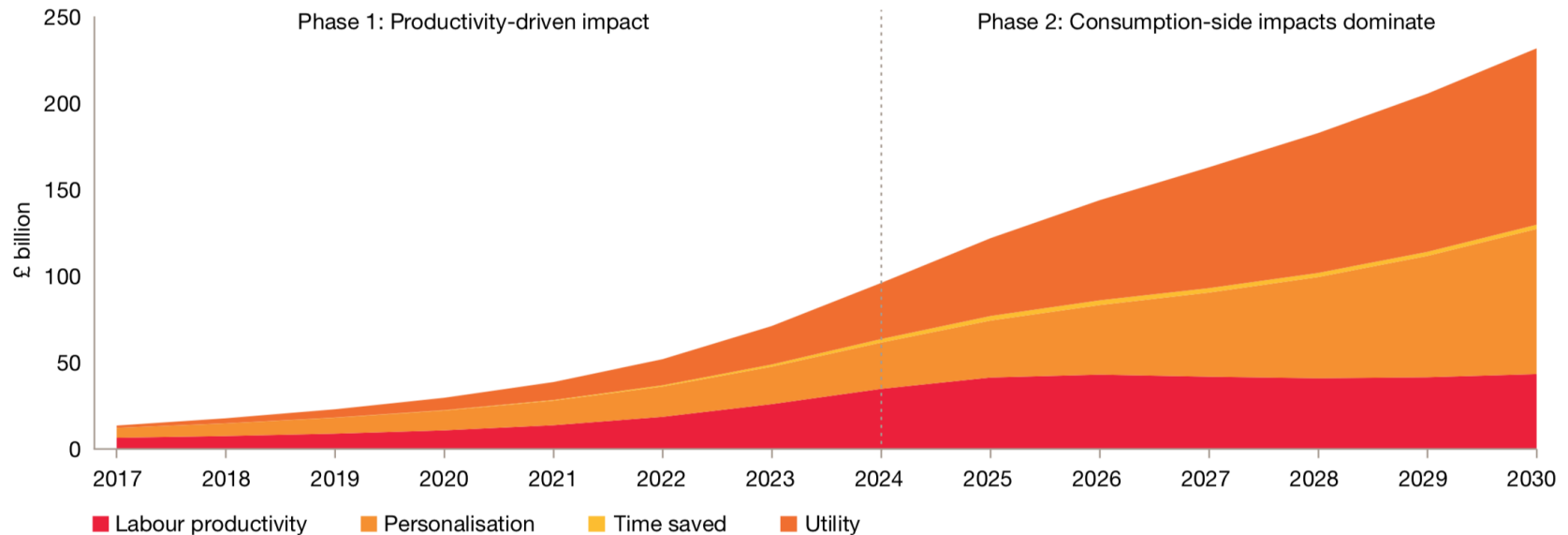
- The PWC analysis shows that firms take time adopting AI techniques into products as the algorithms "grip" competition increases. This moves more AI developments out of productivity towards consumer products

AI seems to be gaining **most traction** in the areas of the business which create **most value**

Impact and Opportunities

Business functions in which AI has been adopted, by industry,[1] % of respondents

	Service operations	Product and/or service development	Marketing and sales	Supply-chain management	Manufacturing	Risk	Human resources	Strategy and corporate finance
Telecom	75	45	38	26	22	23	17	15
High tech	48	59	34	23	20	17	21	17
Financial services	49	26	33	7	6	40	9	14
Professional services	38	34	36	19	11	15	16	11
Electric power and natural gas	46	41	15	14	19	14	15	14
Healthcare systems and services	46	28	17	21	9	19	18	13
Automotive and assembly	27	39	15	11	49	2	8	6
Travel, transport, and logistics	51	34	32	18	4	4	2	3
Retail	23	13	52	38	7	9	8	0
Pharma and medical products	31	31	27	13	28	3	6	4

November 2019

Source: McKinsey Global Survey

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Sectors with more predictable physical activities, greater accessibility to data collection and processing are better suited for automation

Size of bubble indicates % of time spent in US occupations

Ability to automate (%) 0 50 100
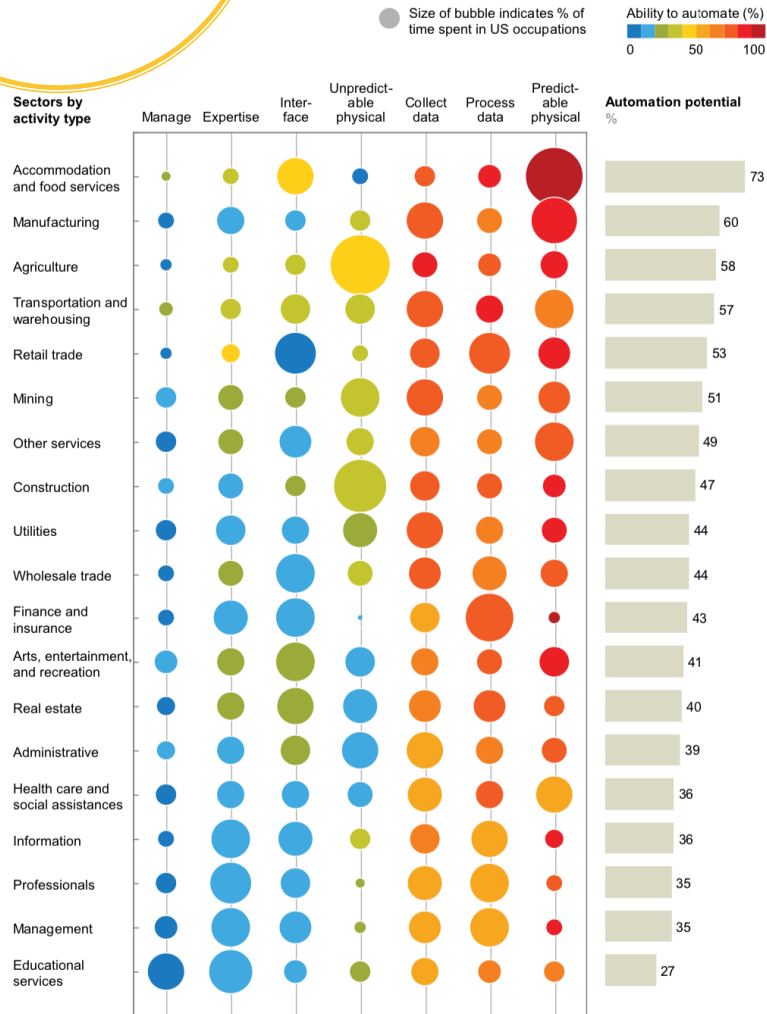
- The potential for automation is based on systems where the physical manipulation is predictable and the data can be collected and processed

- Sectors which rely on a great deal of expertise and management have been difficult to manage

- The mid range of sectors that are ready for automation can become unlocked

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Most jobs are in the **medium risk of automation.**

Proportion of main jobs at risk of automation

England, 2011, 2014 and 2017

Increases with AI, Data and Robotics developments

- 2011
- 2014
- 2017
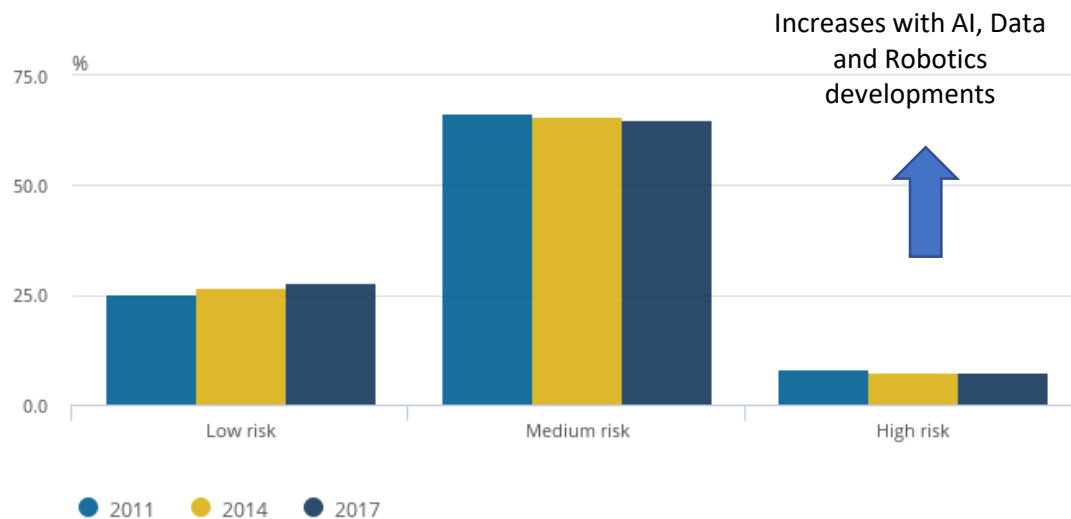
- • The analysis is based on the rather conservative OECD methodology and not the Frey and Osborne model

- • The number of jobs at higher risk of automation is dependent on developments in AI and Robotics:
  - • Perception and manipulation in complex environments
  - • Social intelligence and empathy
  - • Creativity

- • Need to ensure the capitalization of automation exceeds the creative destruction of roles

UNIVERSITY of DERBY

Jobs at medium risk of automation are administrative, skilled trade, care sector, sales and services

Percent of jobs at medium risk of automation

Rushcliffe : 50.7% [Min — Max] Mansfield: 87.5%
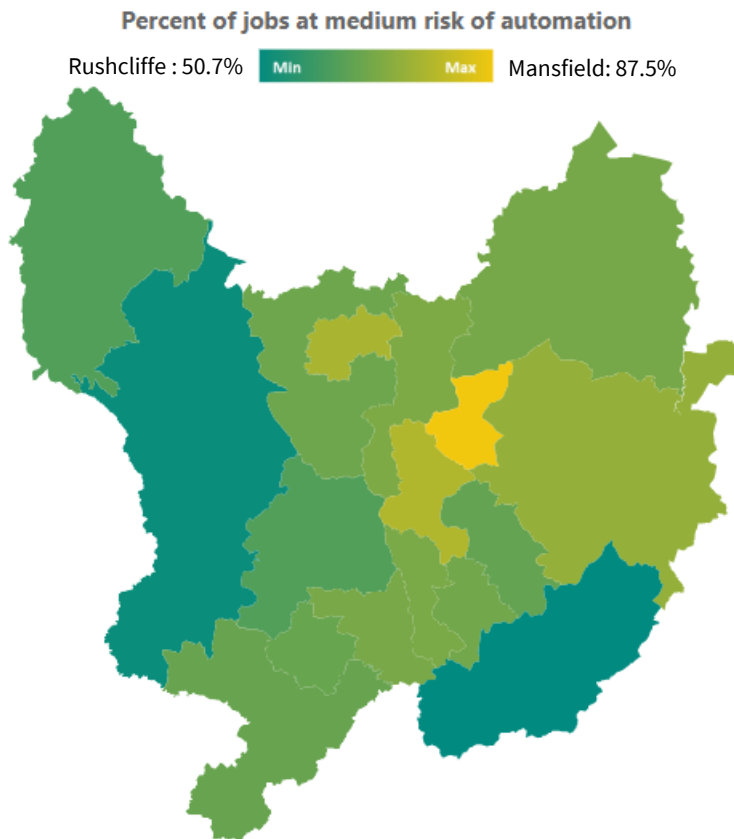
- Only four D2N2 areas have a high risk of automation, with Newark & Sherwood the highest at 12%

- Most opportunities for automation are in the medium risk sectors

- The regions with the highest percentage of jobs in the medium risk are outside of the city centres

- They are economies with a strong reliance on the service, trade and manufacturing sectors

Source: Annual Population Survey, UK Survey of Adult Skills (PIAAC) and Frey and Osborne

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D2N2 is the **14th largest** recipient of Innovate UK funding for projects focused on AI and data

Grant amount by LEP

LEP	Grant amount
London	£230.1M
Oxfordshire	£168.6M
Enterprise M3	£25.1M
Solent	£9.8M
Greater Manchester	£8.8M
Greater Cambridge and Greater...	£7.4M
West of England	£7.4M
Thames Valley Berkshire	£6.9M
Leicester and Leicestershire	£6.5M
Hertfordshire	£6.2M
Gloucestershire	£5.7M
Coast to Capital	£5.5M
Coventry and Warwickshire	£4.7M
D2N2	£4.0M
Lancashire	£3.8M

(axis: £0M £50M £100M £150M £200M £250M)

- London regions, Oxford and Cambridge account for 6 of the top 15 funded regions

- Less than 1% of Innovate UK funding into D2N2 LEP region is in AI and Data, compared to 33% in Oxfordshire

- The largest share of AI and Data funding has been allocated to SMEs and Universities

- In contrast, the funding for Manufacturing, Materials and Mobility has been largely allocated to larger companies and universities

Grant amount by enterprise type
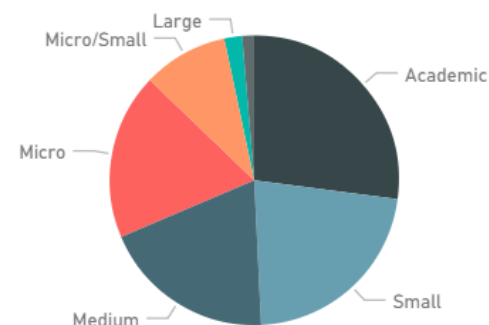
Pie chart segments: Academic, Small, Medium, Micro, Micro/Small, Large

Grand Challenge:
Ageing Society

- Population projections
- Ageing workforce
- Healthy life expectancy
- Inequality in life expectancy

Derby
Derbyshire
Nottingham
Nottinghamshire

Ageing Society 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.

Source: UK Industrial Strategy

Derbyshire and Nottinghamshire have older population compared with England and the UK, while Derby and Nottingham have a younger profile.

While the overall ageing population trend is similar in D2N2 and across England, the projected increase in the working age population is expected to be smaller than average.

Current D2N2 population by age group (2018)

● 15-64 ● 65+ ● 0-14

0.4M (16%)
0.5M (23%)
1.4M (61%)

2.2M

Projected population change (2018-2030) by age group

● 65+ ● 15-64 ● 0-14

9.1% 0.3%
90.6%

119.3K

Projected population % change in D2N2 and England population by age group

● D2N2 ● England

Age group	D2N2	England
65+	25.6%	26.5%
15-64	0.8%	2.4%
0-14	0.1%	0.1%

Ageing Society: Demographics
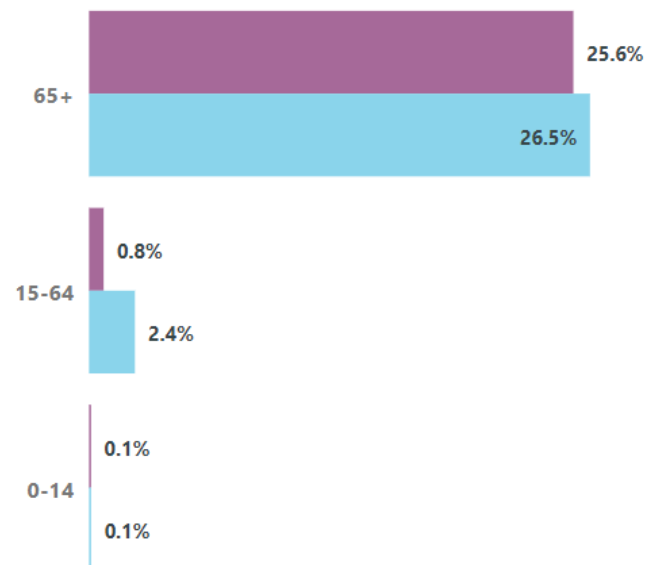
Despite the increases in the state pension age, which are projected to account for the majoring of the working age population growth, the old age dependency ratio* is projected to increase in D2N2 compared to the average.

Projected population growth (2018-2030) in D2N2 and England by age group

● State pension age % ● Working age %

England
- 11.1%
- 6.6%
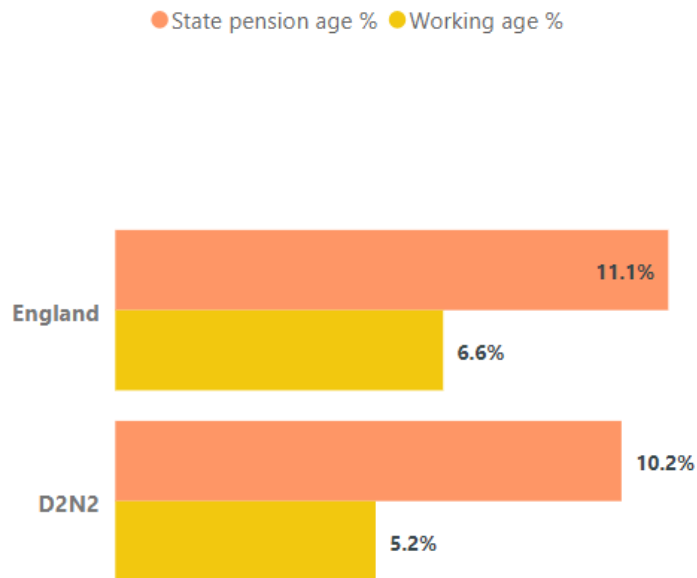
D2N2
- 10.2%
- 5.2%

Old age dependency ratio difference between D2N2 and the average

16 ... 16 ... 18 ... 18

2016 2018 2020 2022 2024 2026 2028 2030

Note: *The number of state pension age residents per 1000 working age residents. ONS Source: ONS,2016-based subnational population projections: Population of State Pension age and working age, and old age dependency ratios.

Ageing Society:
Labour market
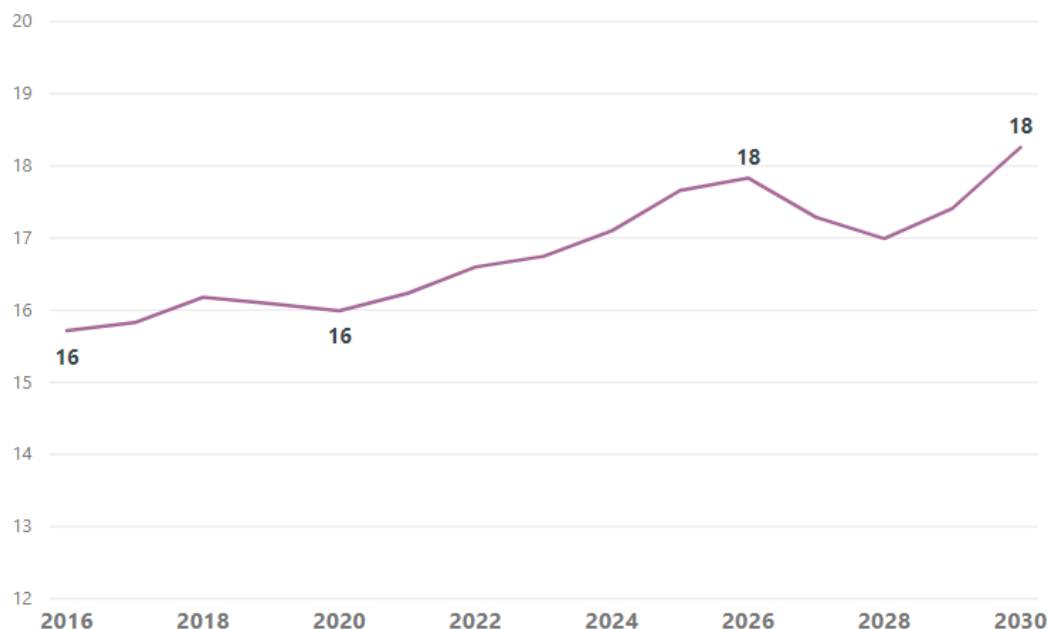
The percentage of workforce aged 50+ has increased over the last 10 years across sectors.
There is a higher than average proportion of 50+ in Energy & Water, Distribution, Accommodation & Food Service, Finance and Public Sectors

Percentage of employees aged 50+ by sector

● 2009 ● 2019 ● 2019 average

38.2%
% of 50+ in 2019

341.5K
number of 50+ in 2019

Sector	2009	2019	2019 average
Agricuture & fishing	63.5%	55.1%	56.0%
Other services	39.0%	39.4%	37.5%
Energy & water	28.9%	45.6%	37.4%
Distribution, hotels & restaurants	32.8%	40.0%	34.3%
Banking finance & insurance etc.	27.9%	42.0%	33.8%
Public admin education & health	30.8%	39.4%	37.4%
Transport & Communication	29.0%	34.6%	33.7%
Manufacturing	28.7%	33.9%	37.4%
Construction	29.5%	31.0%	36.5%
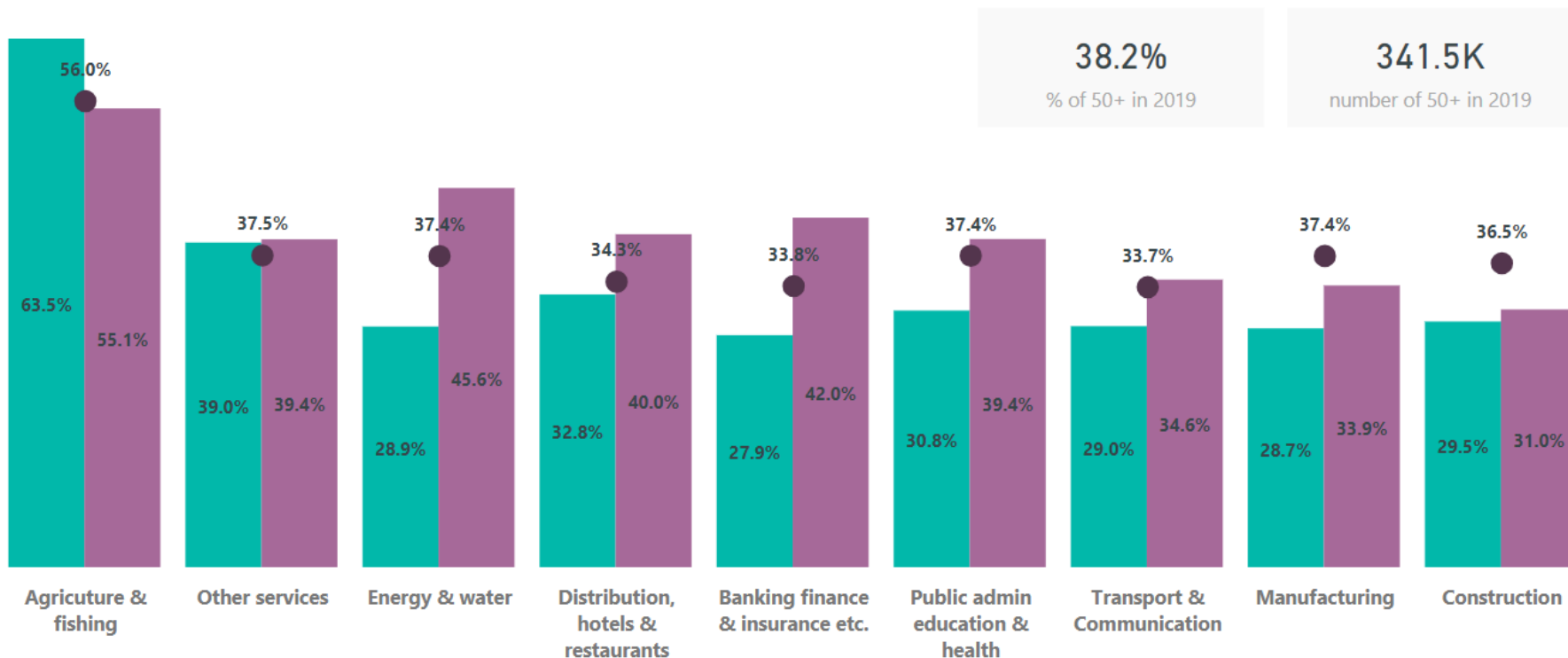
Average healthy life expectancy at birth has been declining in D2N2. In 2017 female life expectancy was 4.4 years lower and male was it was 2.5 years lower than England's average.

Healthy life expectancy at birth by sex in England

● Female ● Male

	2009 - 11	2010 - 12	2011 - 13	2012 - 14	2013 - 15	2014 - 16	2015 - 17
Female	64.0	64.0	63.8	63.9	64.1	63.8	63.8
Male	63.0	63.2	63.2	63.4	63.4	63.3	63.4

Healthy life expectancy at birth by sex in D2N2

	2009 - 11	2010 - 12	2011 - 13	2012 - 14	2013 - 15	2014 - 16	2015 - 17
Female	61.3	61.4	61.0	60.9	60.6	59.8	59.4
Male	61.5	61.1	61.1	60.8	60.5	60.8	60.9
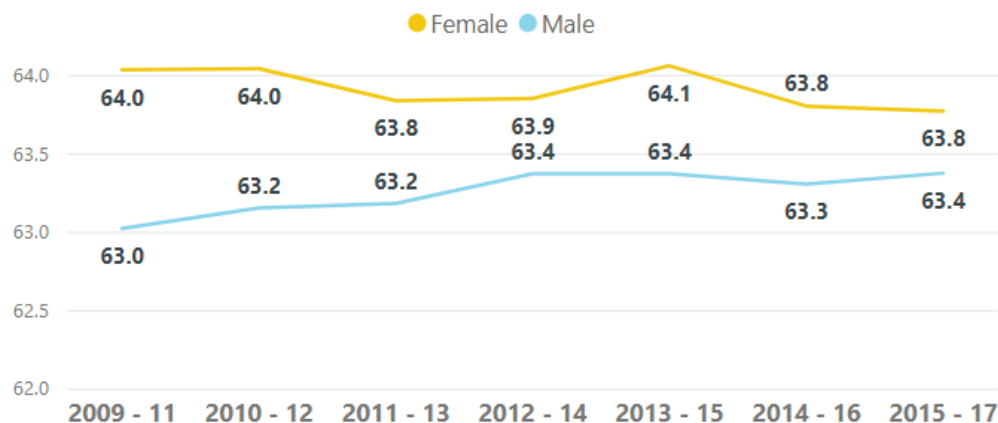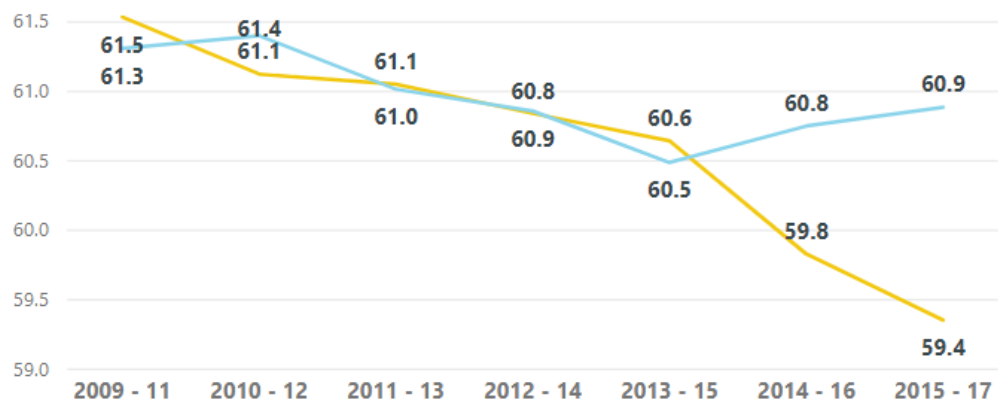
Latest healthy life expectancy at birth estimate in D2N2

● Female ● Male

	Female	Male
Derbyshire	62.2	63.4
Nottinghamshire	61.6	62.5
Derby	60.2	60.7
Nottingham	53.5	57.0
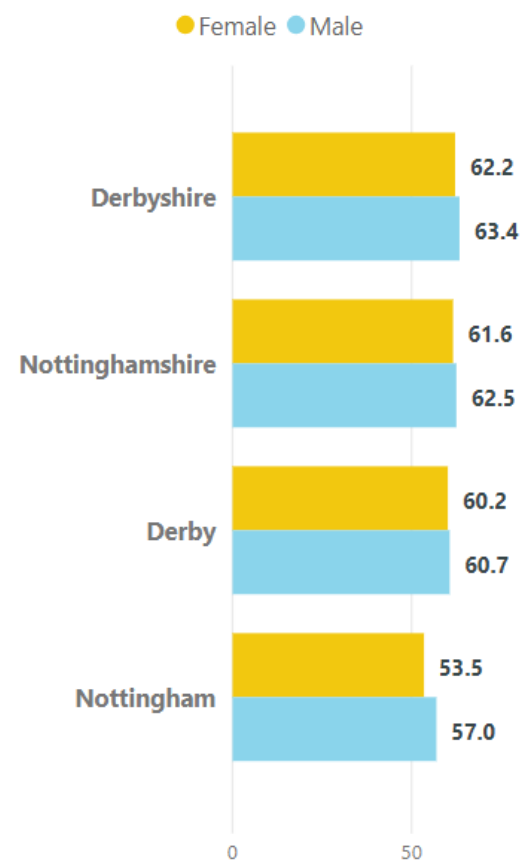
Source: D2N2 analysis of Public Health Outcomes Framework data

While the life expectancy inequality* is higher for men than women, the latter has been rising.

Inequality in life expectancy at birth by sex in England
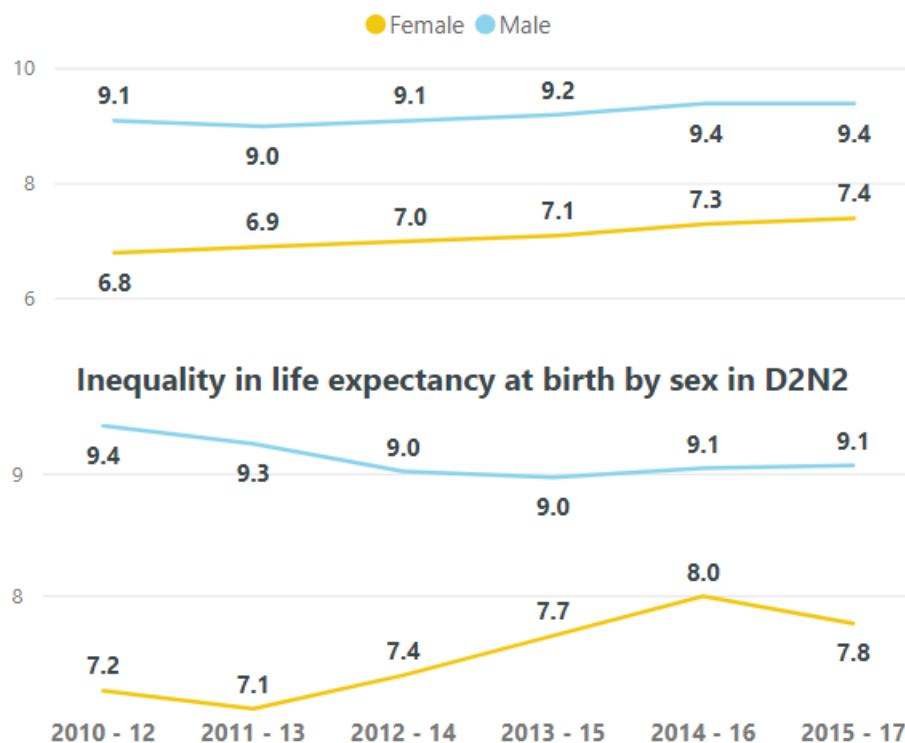
● Female ● Male

9.1		9.1	9.2		
	9.0			9.4	9.4
	6.9	7.0	7.1	7.3	7.4
6.8					

Inequality in life expectancy at birth by sex in D2N2

9.4	9.3	9.0		9.1	9.1
			9.0		
				8.0	
		7.4	7.7		7.8
7.2	7.1				

2010 - 12   2011 - 13   2012 - 14   2013 - 15   2014 - 16   2015 - 17
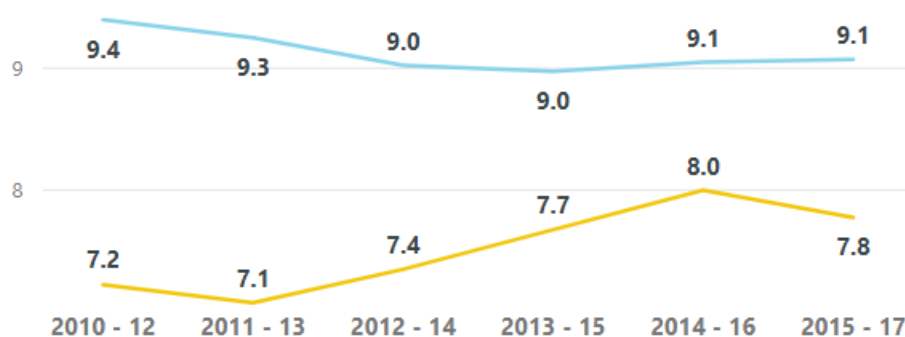
Inequality in life expectancy at birth in D2N2 (2015-17)
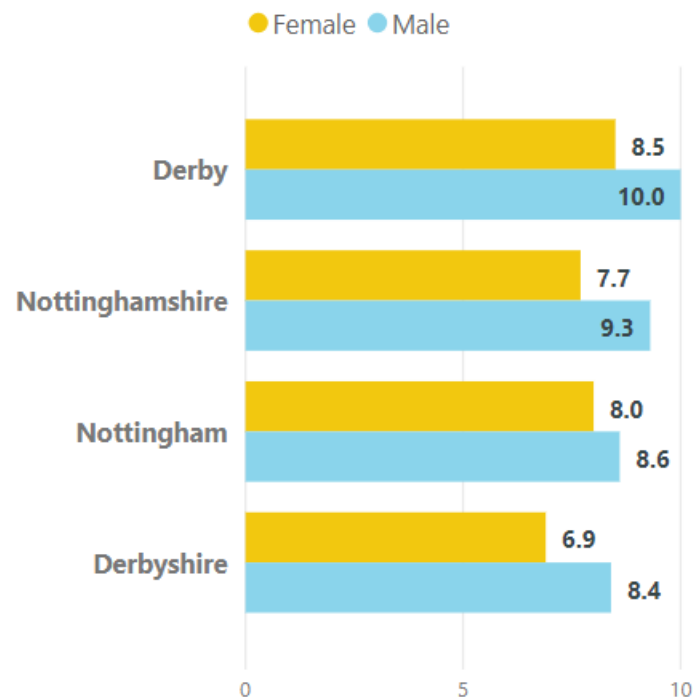
● Female ● Male

	Female	Male
Derby	8.5	10.0
Nottinghamshire	7.7	9.3
Nottingham	8.0	8.6
Derbyshire	6.9	8.4

Appendix:

Additions to the latest version, including changes prompted by the consultation feedback.

Chapter	Topic	Additions/changes	Page number
Economy	Sectoral assets	Added Health and Safety Laboratory to the list of assets	29
Economy	Visitor Economy	Added Buxton Opera House to the list of assets	31
Economy	Visitor Economy	Highlighted the importance and comparative performance of the visitor economy across D2N2 using MEEO-supplied data	32
Ideas	R&D expenditure	Added HMRC data on R&D tax claims and associated expenditure	38
Ideas	Innovate UK projects	Updated and clarified the Innovate UK data	44
Infrastructure	Transport	Added trans-Pennine connectivity priorities	76, 78
Infrastructure	Congestion mapping	Included full maps (incl. in Appendix)	77, Appendix
Infrastructure	Ofcom data mapping	Updated broadband data and maps	82, 83
Infrastructure	Electricity consumption mapping	Included full maps	84
Infrastructure	Housing	Added analysis of housing stock, trends, affordability and estimated baseline housing need	86-90
Business Environment	Business survey	Included EMC QES data limitations and applicability	107
Place	Travel to learn	Highlighted areas across D2N2 where out-of area FE delivery may be affecting access to staff training opportunities	117
Place	Local Authority economic performance	Included workplace earnings, clarified employment rate denominator	119
Place	Earnings	Added workplace earnings to rural-urban assesment	135
Place	Rural service and project delivery premium	Highlighted higher rural delivery costs and listed contributing factors.	139-140
Grand Challenges	Glean Growth	Added research by NCC Energy Services	155-167
Grand Challenges	Future of Mobility	Added to threats and opportunities	174
Appendix		Additions to evidence base v1.7	202

R&D expenditure is associated with productivity performance

R&D (BERD & HERD) and Productivity (GVA per FTE) by LEP

Places with larger business and higher education R&D expenditure tend to be more productive
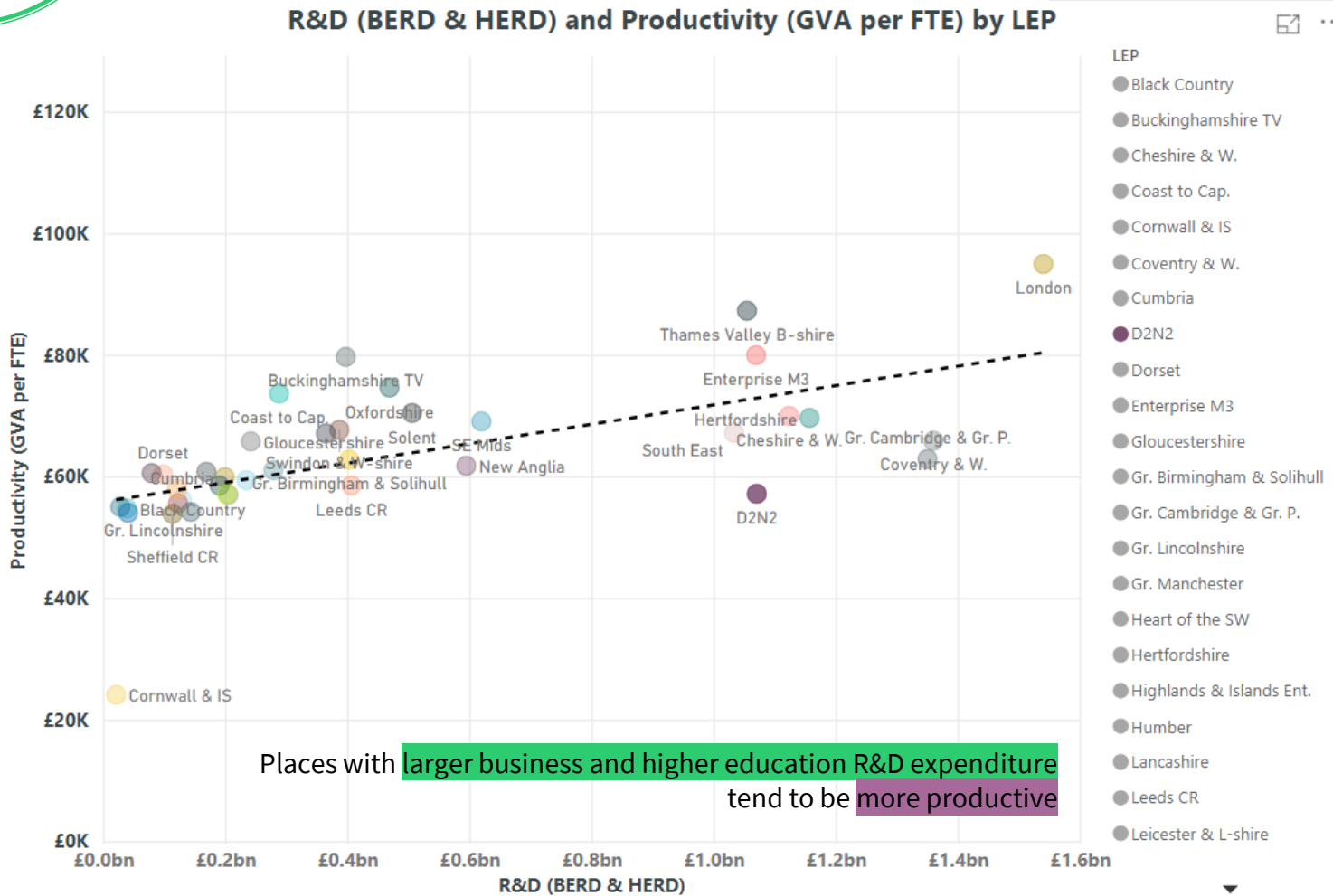
Source: D2N2 analysis of ONS, BRES & data collated by Smart Specialisation Hub

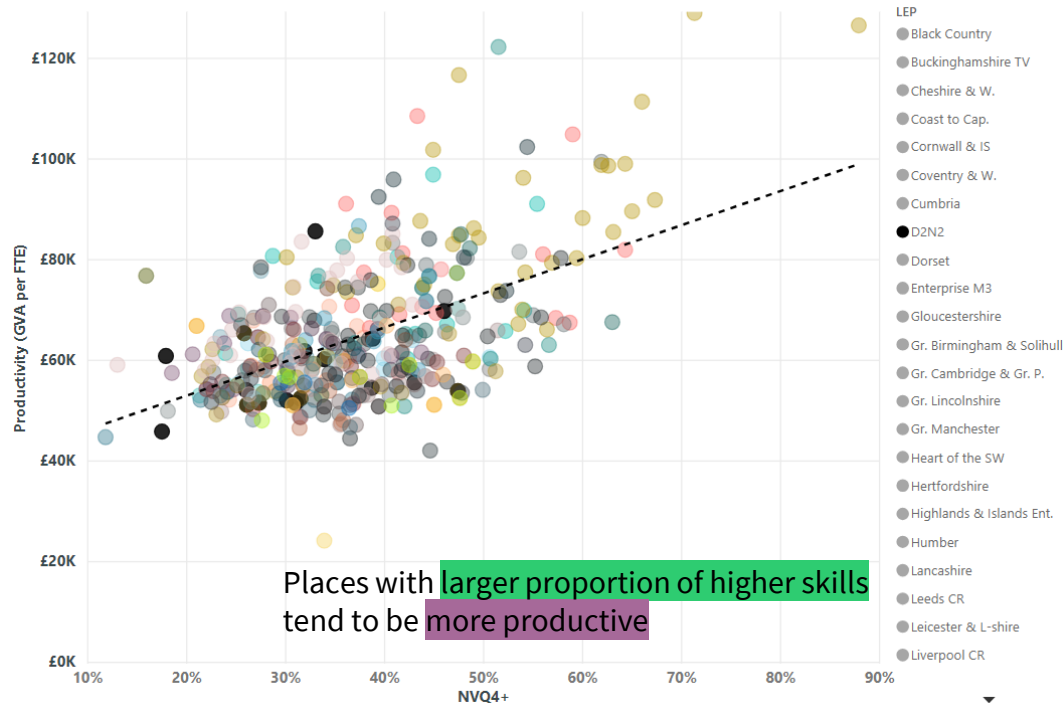# The proportion of businesses engaged in R&D is associated with productivity performance

Innovation activity (% of firms engaged in R&D) and Productivity (GVA per FTE) by LEP

Places with higher proportion of businesses engaged in R&D tend to be more productive

Skill levels are correlated with productivity performance

NVQ4+ and Productivity (GVA per FTE) by Local Authority and LEP

No Qualifications (%) and Productivity (GVA per FTE) by LA and LEP

LEP
- Black Country
- Buckinghamshire TV
- Cheshire & W.
- Coast to Cap.
- Cornwall & IS
- Coventry & W.
- Cumbria
- D2N2
- Dorset
- Enterprise M3
- Gloucestershire
- Gr. Birmingham & Solihull
- Gr. Cambridge & Gr. P.
- Gr. Lincolnshire
- Gr. Manchester
- Heart of the SW
- Hertfordshire
- Highlands & Islands Ent.
- Humber
- Lancashire
- Leeds CR
- Leicester & L-shire
- Liverpool CR

Places with larger proportion of higher skills tend to be more productive

Places with larger proportion of people with no qualifications tend to be less productive

Transport outcomes such as travel times to a work center are linked with productivity performance
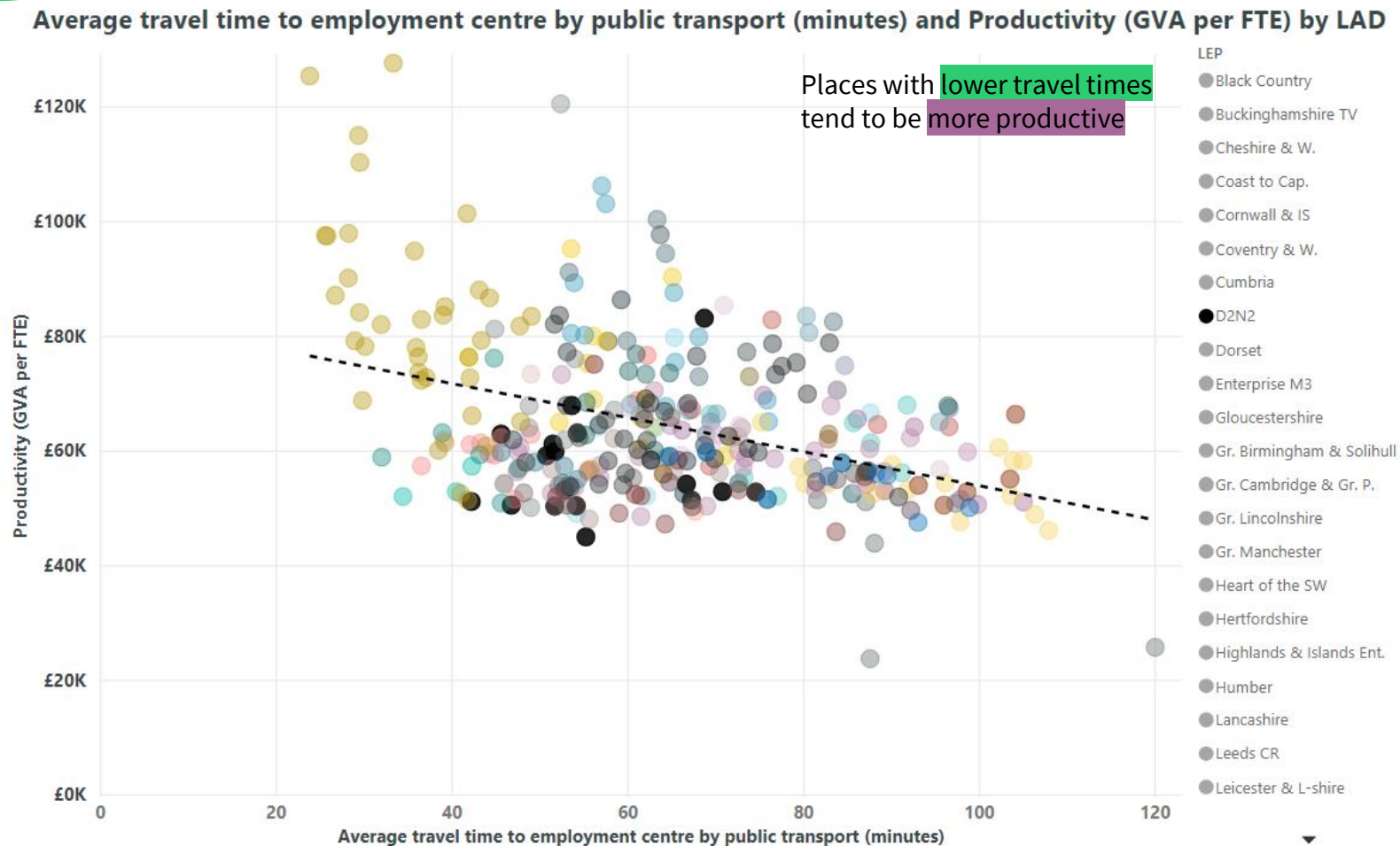
Average travel time to employment centre by public transport (minutes) and Productivity (GVA per FTE) by LAD

Places with lower travel times tend to be more productive

LEP
- Black Country
- Buckinghamshire TV
- Cheshire & W.
- Coast to Cap.
- Cornwall & IS
- Coventry & W.
- Cumbria
- D2N2
- Dorset
- Enterprise M3
- Gloucestershire
- Gr. Birmingham & Solihull
- Gr. Cambridge & Gr. P.
- Gr. Lincolnshire
- Gr. Manchester
- Heart of the SW
- Hertfordshire
- Highlands & Islands Ent.
- Humber
- Lancashire
- Leeds CR
- Leicester & L-shire

Source: D2N2 analysis of ONS, Regional GVA, BRES, DfT

Broadband availability (or lack thereof) is associated with productivity performance

UFBB availability (% premises) and Productivity (GVA per FTE) by Local Authority and LEP

LEP
- Black Country
- Buckinghamshire TV
- Cheshire & W.
- Coast to Cap.
- Cornwall & IS
- Coventry & W.
- Cumbria
- D2N2
- Dorset
- Enterprise M3
- Gloucestershire
- Gr. Birmingham & Solih
- Gr. Cambridge & Gr. P.
- Gr. Lincolnshire
- Gr. Manchester
- Heart of the SW
- Hertfordshire
- Humber
- Lancashire
- Leeds CR
- Leicester & L-shire
- Liverpool CR
- London

Places with wider Ultrafast BB availability tend to be more productive
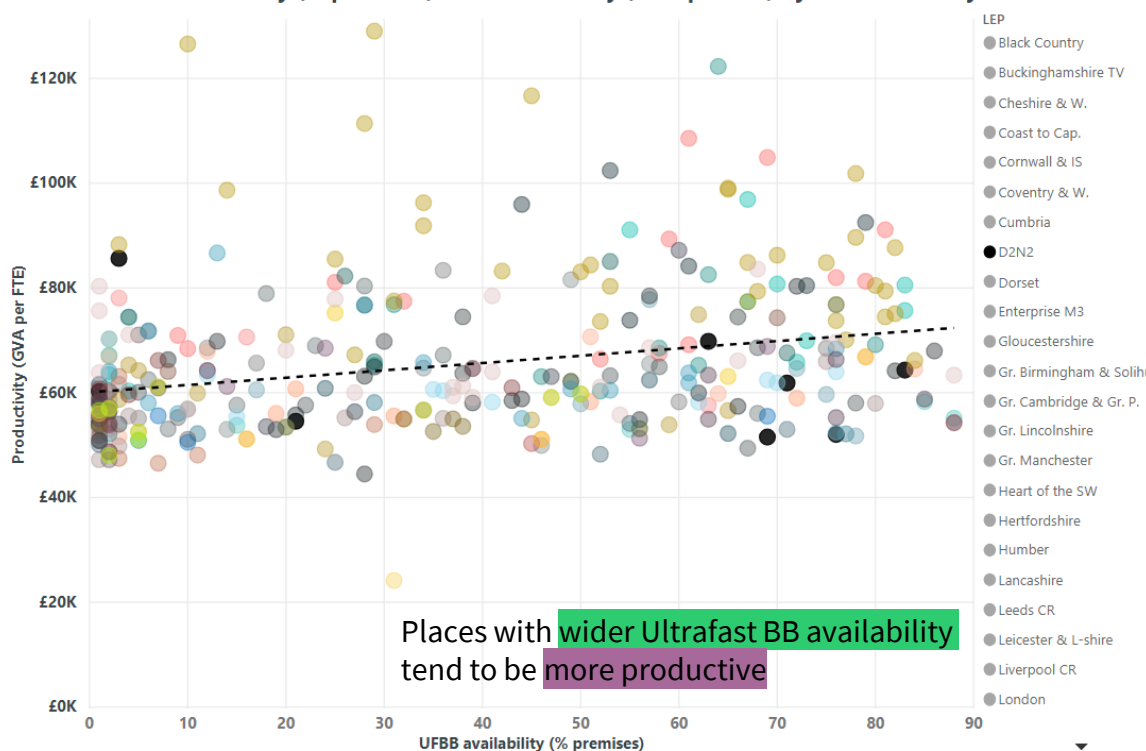
% of premises unable to receive 30Mbit/s and Productivity (GVA per FTE) by LA

Places with larger proportion of premises without access to BB tend to be less productive
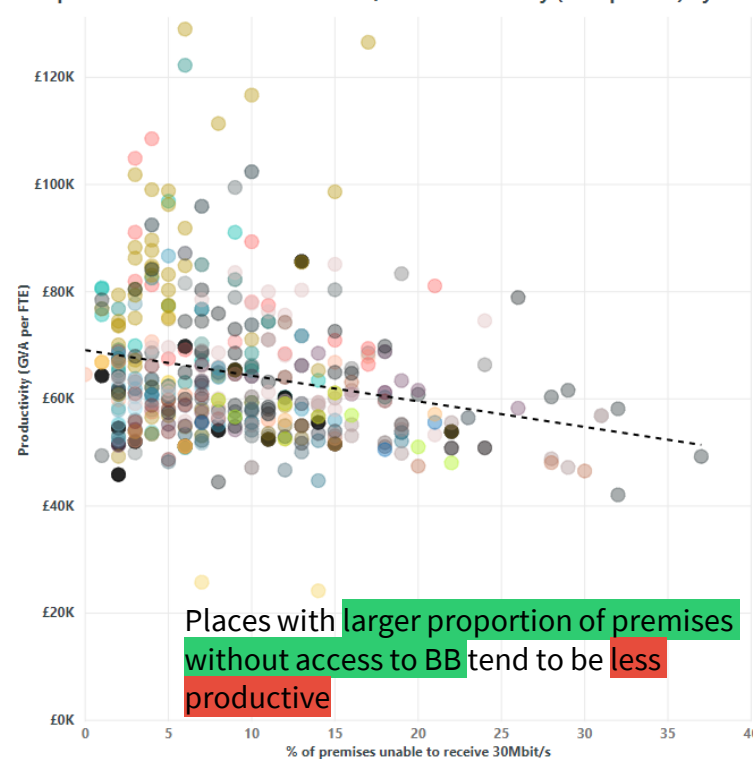
Business density is associated with productivity performance
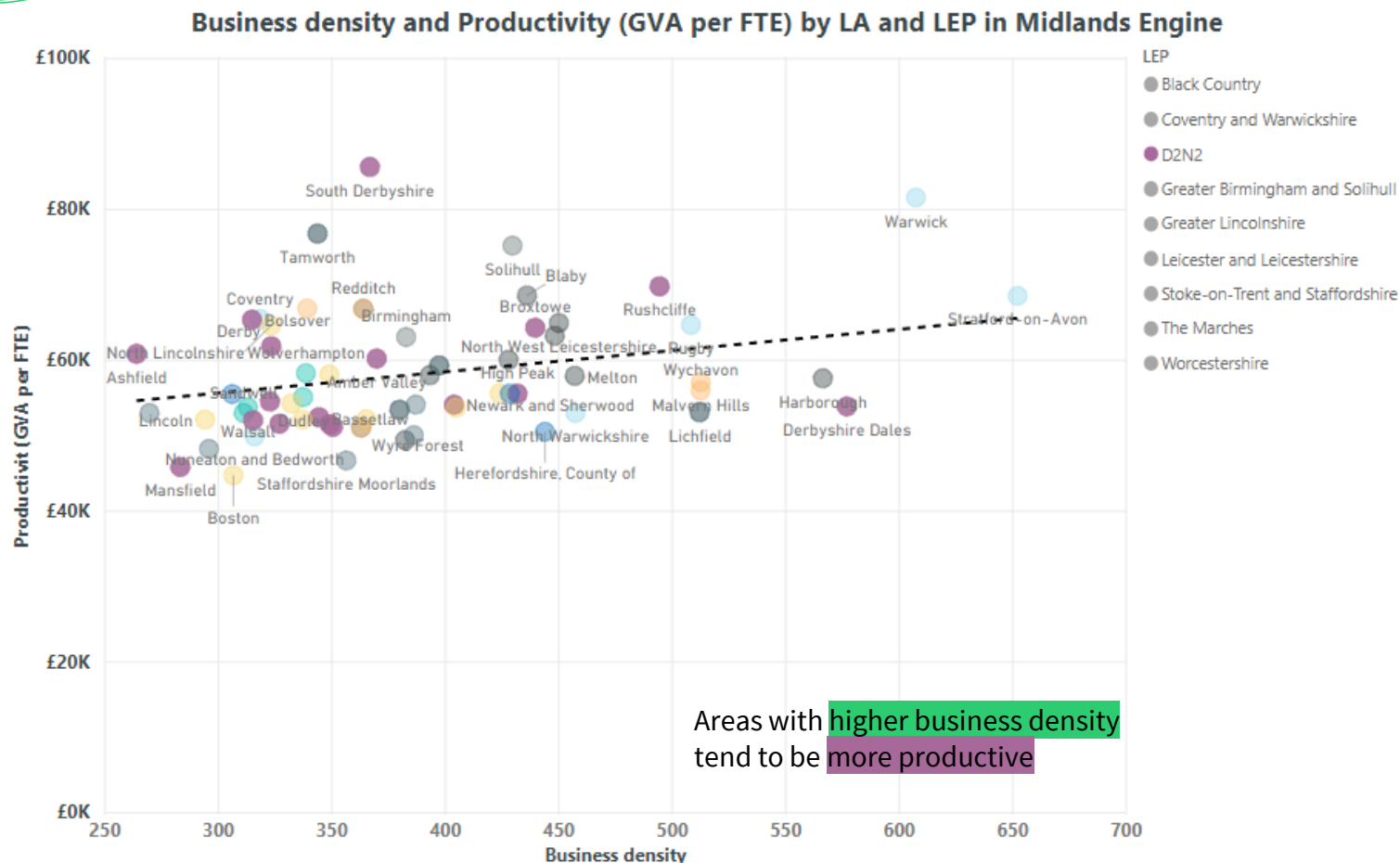
Business density and Productivity (GVA per FTE) by LA and LEP in Midlands Engine

Areas with higher business density tend to be more productive

Exporting activities are linked to productivity performance
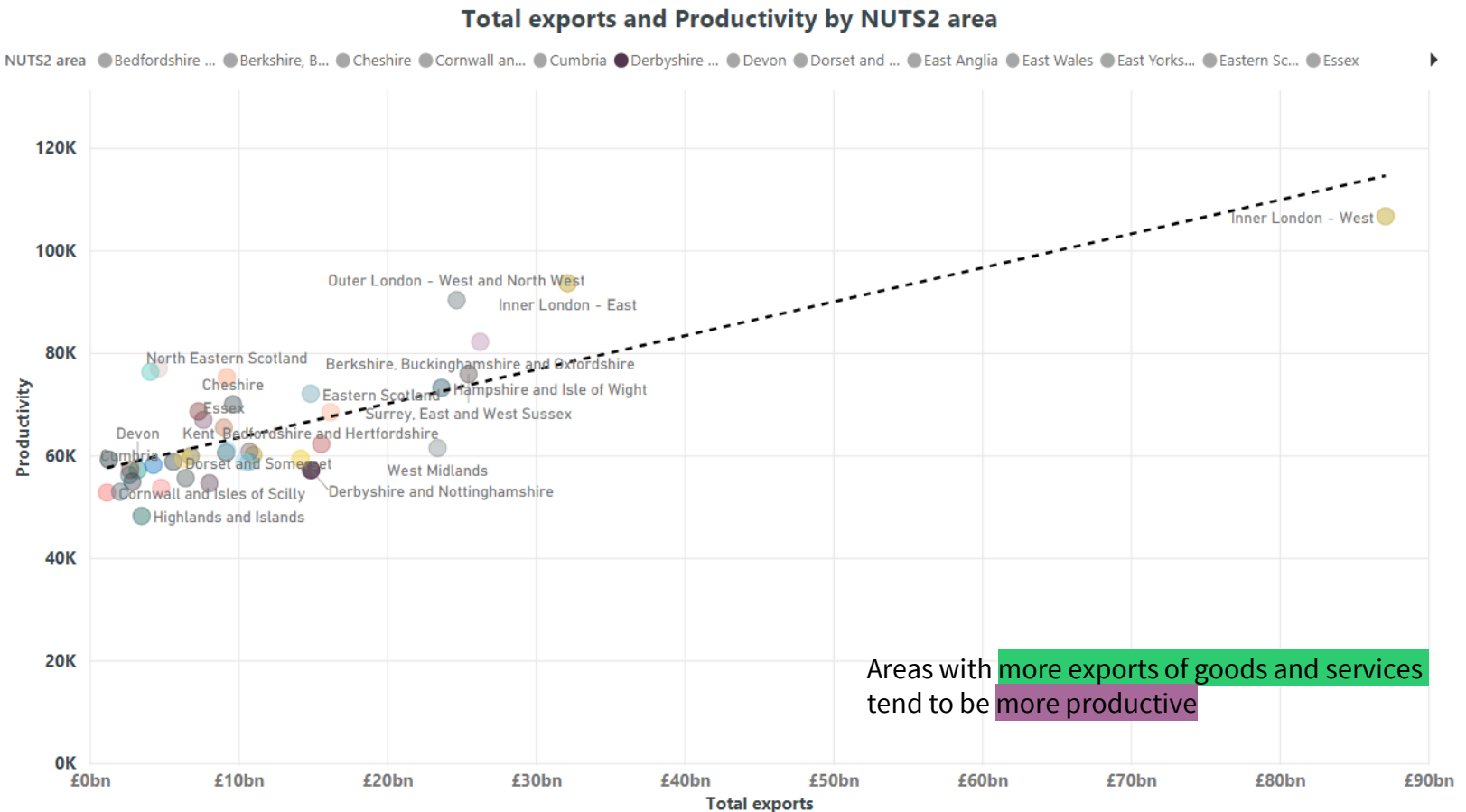
Total exports and Productivity by NUTS2 area

NUTS2 area ● Bedfordshire ... ● Berkshire, B... ● Cheshire ● Cornwall an... ● Cumbria ● Derbyshire ... ● Devon ● Dorset and ... ● East Anglia ● East Wales ● East Yorks... ● Eastern Sc... ● Essex ▶

Areas with more exports of goods and services tend to be more productive

Deprivation is linked to productivity performance

Less deprived areas (higher IMD rank) tend to be more productive
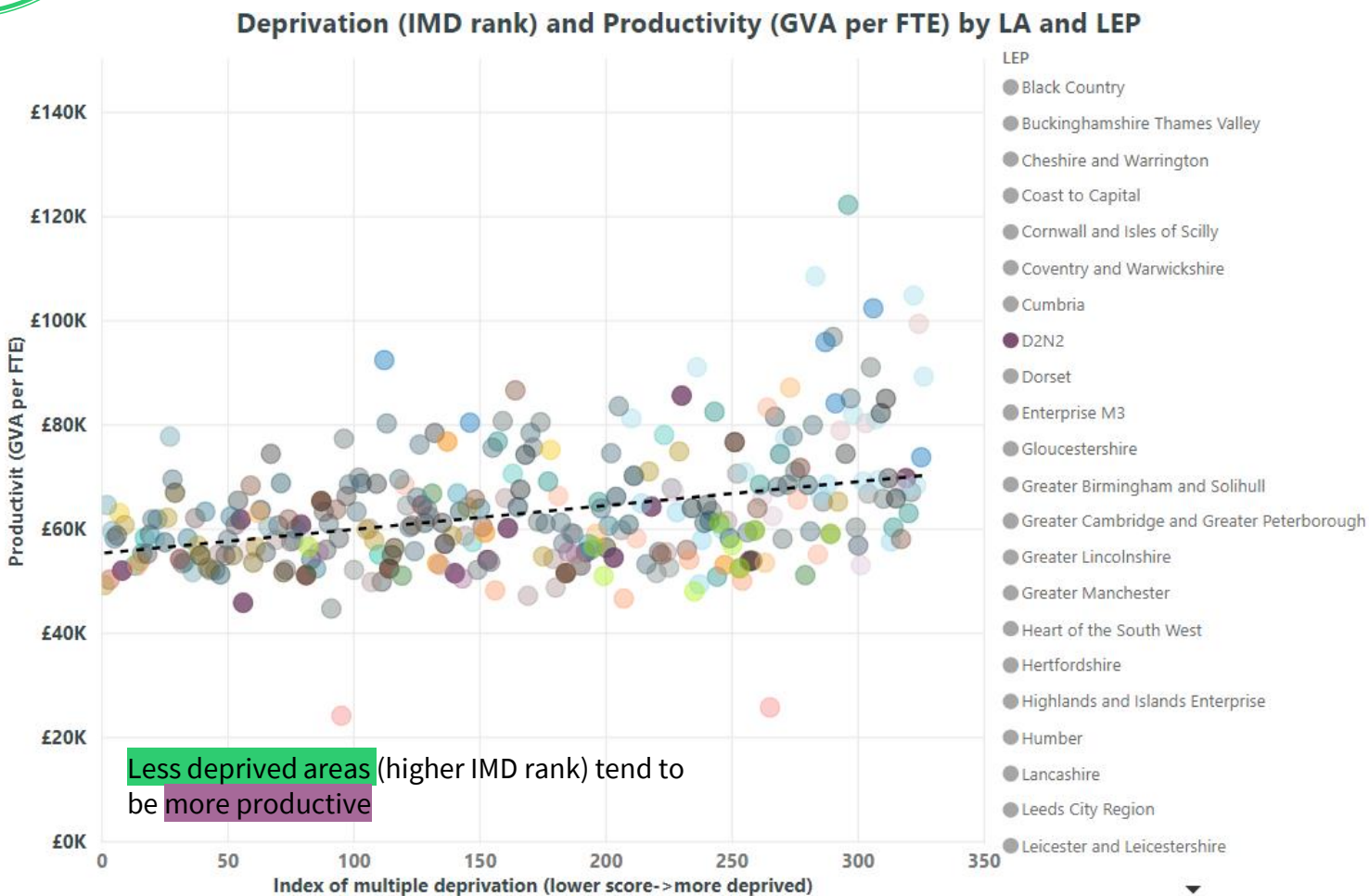
Note: Excludes London boroughs Source: D2N2 analysis of ONS, Regional GVA, BRES, and IMD data

Places:
Local
Authority
Rankings

Rural-Urban Classification: **Urban with City and Town**

UKCI

Derby

Median • Rank (higher=better)

IMD

Derby

Median • Score rank (higher=better)

Places: Local Authority Rankings

Rural-Urban Classification: Urban with Significant Rural

UKCI

South Derbyshire

- Median
- Rank (higher=better)
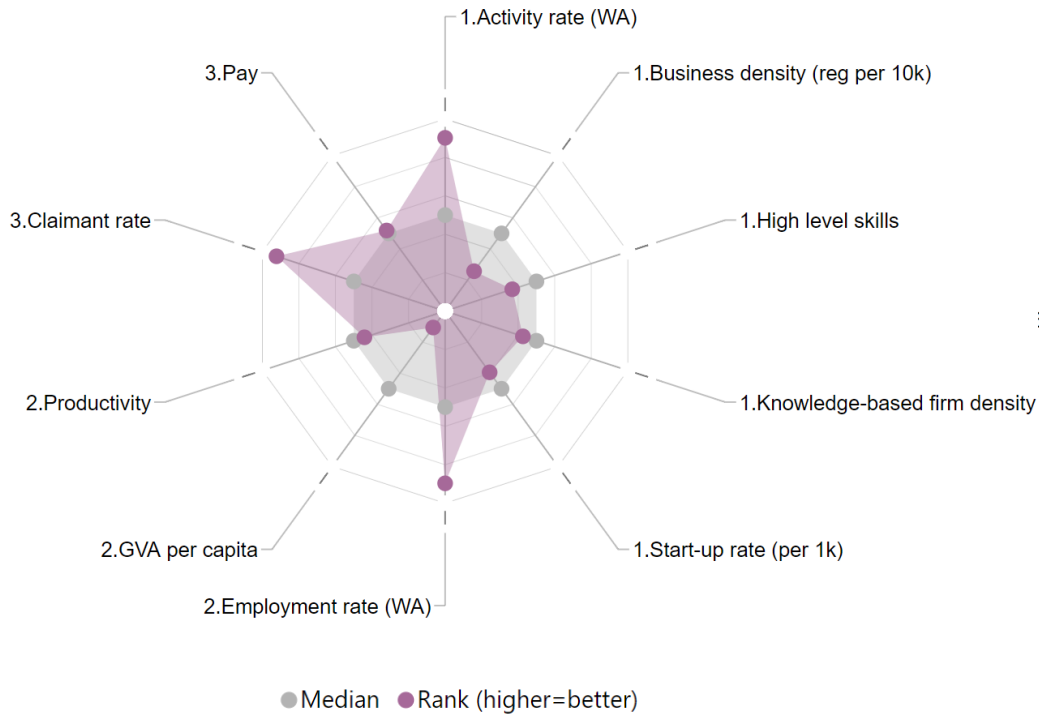
IMD

South Derbyshire

- Median
- Score rank (higher=better)
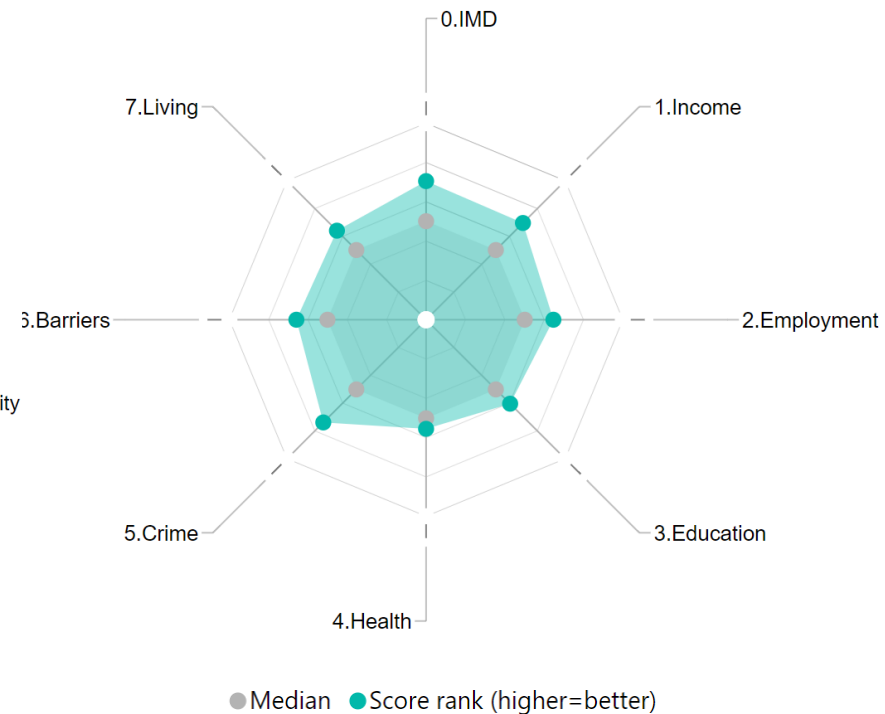
Erewash
Derbyshire

Places:
Local
Authority
Rankings

Rural-Urban Classification: Urban with Minor Conurbation

UKCI

Erewash

- 1.Activity rate (WA)
- 3.Pay
- 3.Claimant rate
- 2.Productivity
- 2.GVA per capita
- 2.Employment rate (WA)
- 1.Start-up rate (per 1k)
- 1.Knowledge-based firm density
- 1.High level skills
- 1.Business density (reg per 10k)

●Median ●Rank (higher=better)

IMD

Erewash

- 0.IMD
- 7.Living
- 6.Barriers
- 5.Crime
- 4.Health
- 3.Education
- 2.Employment
- 1.Income

●Median ●Score rank (higher=better)

Source: D2N2 visualisation of 2019 UK Competitiveness Index data, Nottingham Business School; and 2015 Index of Multiple Deprivation, DCLG

Places:
Local
Authority
Rankings

Rural-Urban Classification: Urban with Minor Conurbation

UKCI

Amber Valley

- 1.Activity rate (WA)
- 1.Business density (reg per 10k)
- 1.High level skills
- 1.Knowledge-based firm density
- 1.Start-up rate (per 1k)
- 2.Employment rate (WA)
- 2.GVA per capita
- 2.Productivity
- 3.Claimant rate
- 3.Pay
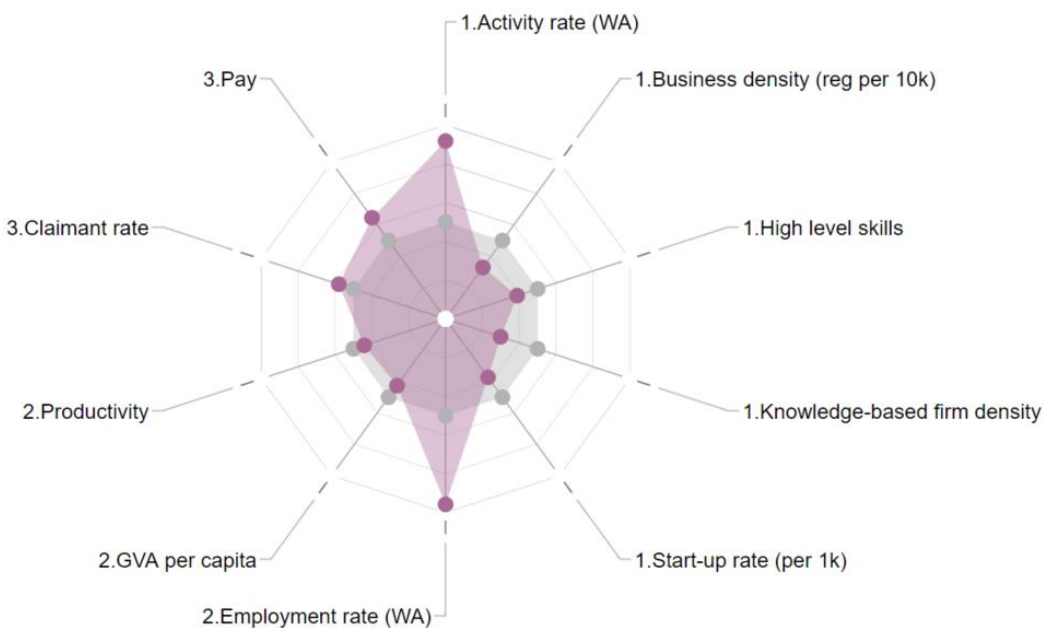
● Median ● Rank (higher=better)

IMD

Amber Valley

- 0.IMD
- 1.Income
- 2.Employment
- 3.Education
- 4.Health
- 5.Crime
- 6.Barriers
- 7.Living

● Median ● Score rank (higher=better)

Source: D2N2 visualisation of 2019 UK Competitiveness Index data, Nottingham Business School; and 2015 Index of Multiple Deprivation, DCLG

North East Derbyshire
Derbyshire

Rural-Urban Classification: Urban with City and Town

Places:
Local
Authority
Rankings

UKCI

North East Derbyshire

- 1.Activity rate (WA)
- 1.Business density (reg per 10k)
- 1.High level skills
- 1.Knowledge-based firm density
- 1.Start-up rate (per 1k)
- 2.Employment rate (WA)
- 2.GVA per capita
- 2.Productivity
- 3.Claimant rate
- 3.Pay
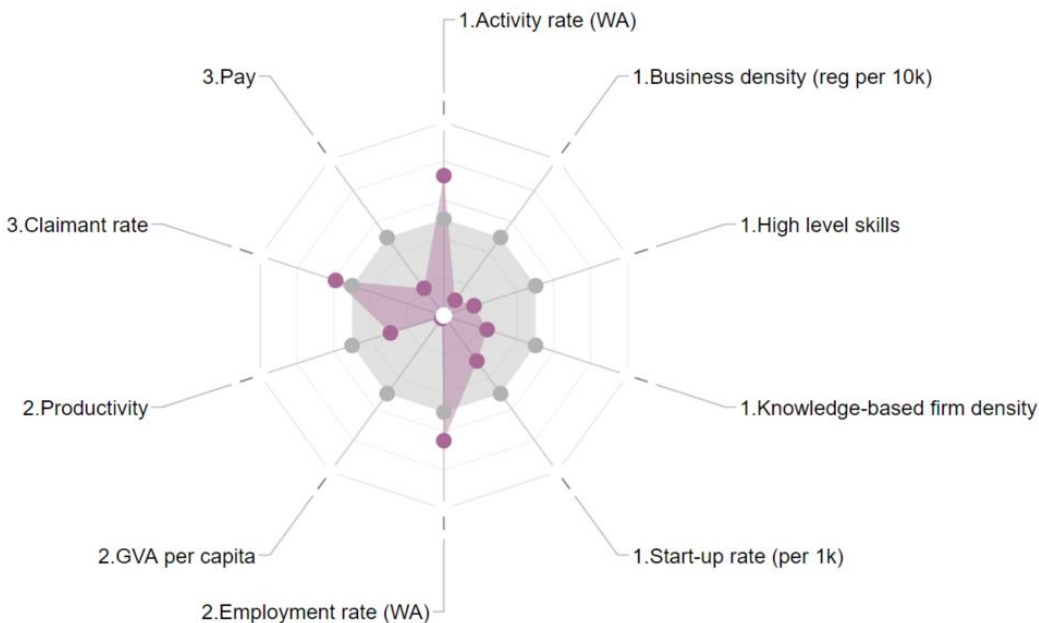
● Median ● Rank (higher=better)

IMD

North East Derbyshire

- 0.IMD
- 1.Income
- 2.Employment
- 3.Education
- 4.Health
- 5.Crime
- 6.Barriers
- 7.Living

● Median ● Score rank (higher=better)

Places:
Local
Authority
Rankings

Rural-Urban Classification: Urban with Significant Rural

UKCI

IMD

Source: D2N2 visualisation of 2019 UK Competitiveness Index data, Nottingham Business School; and 2015 Index of Multiple Deprivation, DCLG

Rural-Urban Classification: **Urban City and Town**

UKCI

Chesterfield

- 1.Activity rate (WA)
- 1.Business density (reg per 10k)
- 1.High level skills
- 1.Knowledge-based firm density
- 1.Start-up rate (per 1k)
- 2.Employment rate (WA)
- 2.GVA per capita
- 2.Productivity
- 3.Claimant rate
- 3.Pay

●Median ●Rank (higher=better)

IMD

Chesterfield

- 0.IMD
- 1.Income
- 2.Employment
- 3.Education
- 4.Health
- 5.Crime
- 6.Barriers
- 7.Living

●Median ●Score rank (higher=better)
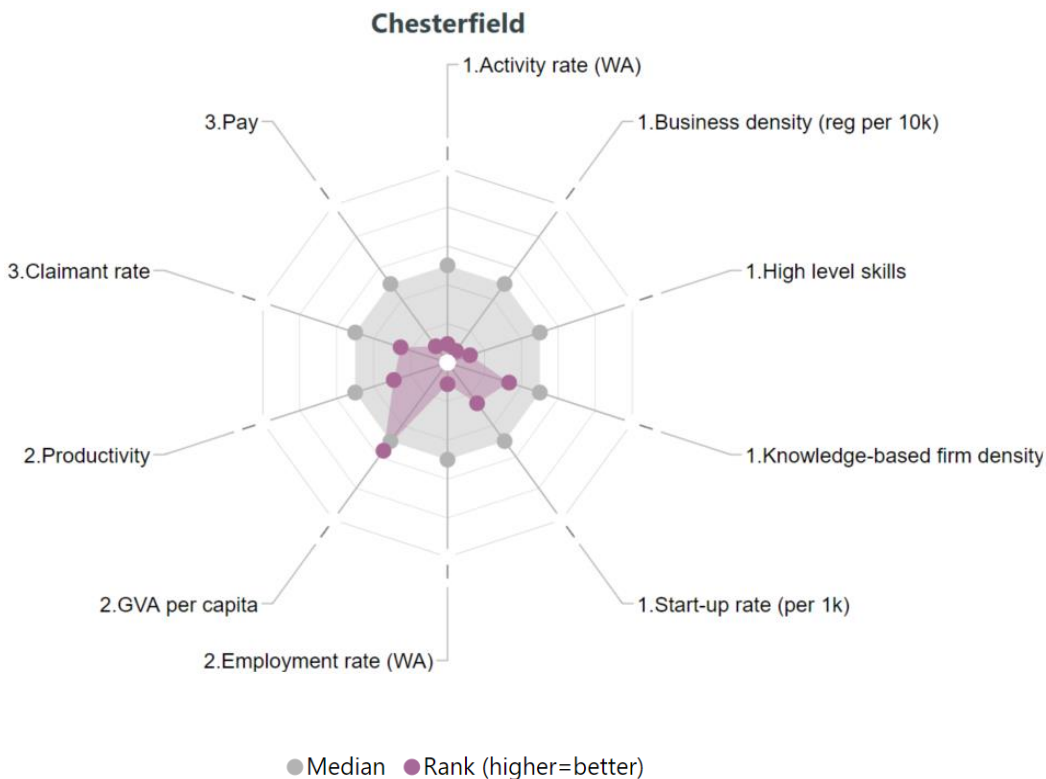
Places:
Local
Authority
Rankings

Derbyshire Dales
Derbyshire

Rural-Urban Classification: Mainly Rural

UKCI
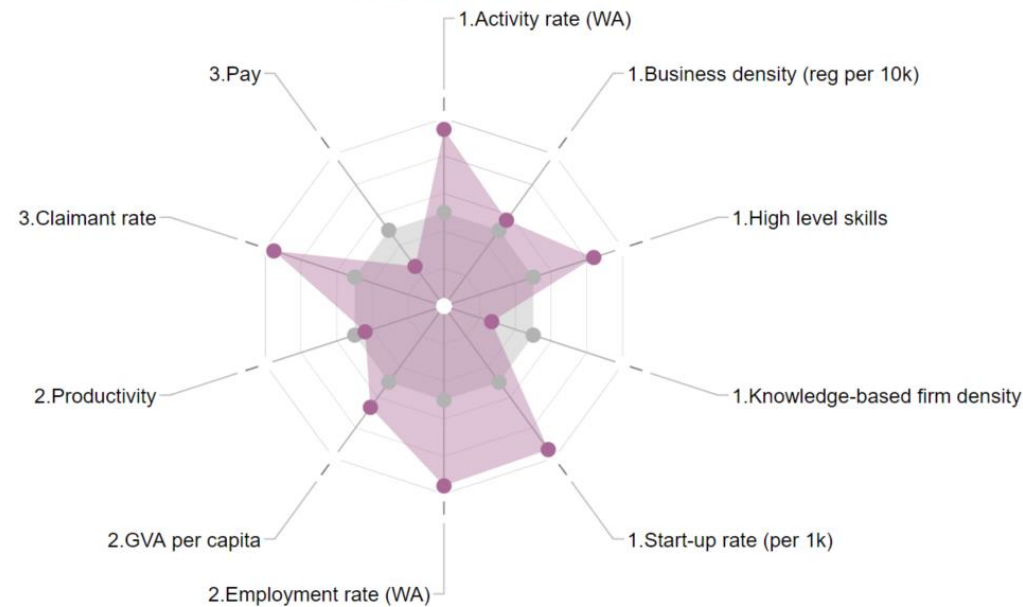
Derbyshire Dales

● Median ● Rank (higher=better)

IMD

Derbyshire Dales

● Median ● Score rank (higher=better)

Places:
Local
Authority
Rankings

Places:
Local
Authority
Rankings

Rural-Urban Classification: Largely Rural

UKCI

IMD

IMD and UKCI: Nottingham

Rural-Urban Classification: Urban with Minor Conurbation

Places: Local Authority Rankings

UKCI

Nottingham

- 1.Activity rate (WA)
- 1.Business density (reg per 10k)
- 1.High level skills
- 1.Knowledge-based firm density
- 1.Start-up rate (per 1k)
- 2.Employment rate (WA)
- 2.GVA per capita
- 2.Productivity
- 3.Claimant rate
- 3.Pay
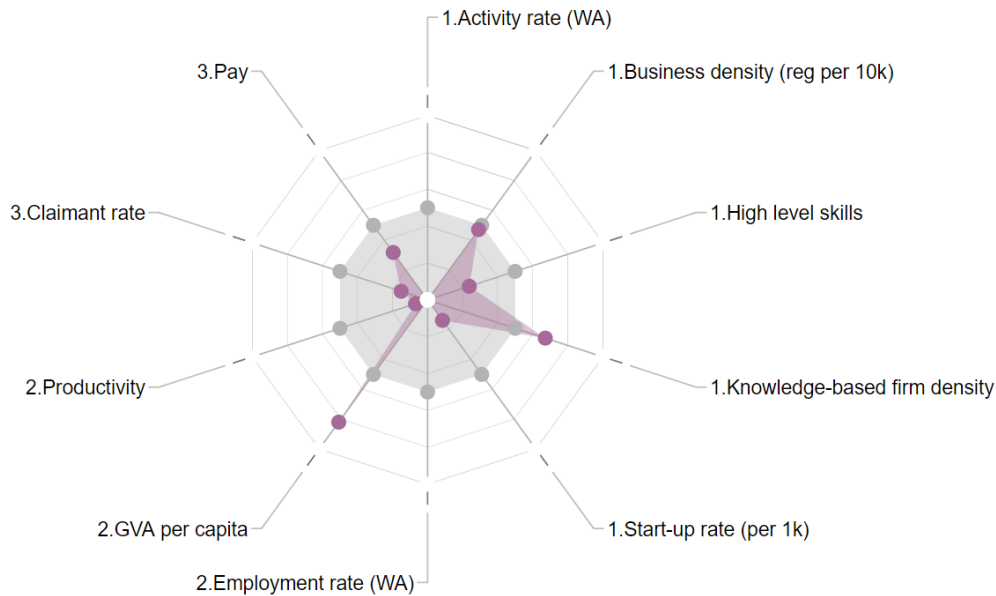
● Median ● Rank (higher=better)

IMD

Nottingham

- 0.IMD
- 1.Income
- 2.Employment
- 3.Education
- 4.Health
- 5.Crime
- 6.Barriers
- 7.Living

● Median ● Score rank (higher=better)

IMD and UKCI:
Rushcliffe
Nottinghamshire

Rural-Urban Classification: Largely Rural

UKCI

IMD

November
2019

Source: D2N2 visualisation of 2019 UK Competitiveness Index data, Nottingham Business School; and 2015 Index of Multiple Deprivation, DCLG

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Broxtowe
Nottinghamshire

Places:
Local
Authority
Rankings

Rural-Urban Classification: Urban with Minor Conurbation

UKCI

IMD

Broxtowe

- 1.Activity rate (WA)
- 1.Business density (reg per 10k)
- 1.High level skills
- 1.Knowledge-based firm density
- 1.Start-up rate (per 1k)
- 2.Employment rate (WA)
- 2.GVA per capita
- 2.Productivity
- 3.Claimant rate
- 3.Pay

● Median ● Rank (higher=better)

Broxtowe

- 0.IMD
- 1.Income
- 2.Employment
- 3.Education
- 4.Health
- 5.Crime
- 6.Barriers
- 7.Living

● Median ● Score rank (higher=better)

Places:
Local Authority Rankings

Rural-Urban Classification: Urban with Minor Conurbation

UKCI

Gedling

- 1.Activity rate (WA)
- 1.Business density (reg per 10k)
- 1.High level skills
- 1.Knowledge-based firm density
- 1.Start-up rate (per 1k)
- 2.Employment rate (WA)
- 2.GVA per capita
- 2.Productivity
- 3.Claimant rate
- 3.Pay

● Median ● Rank (higher=better)

IMD

Gedling

- 0.IMD
- 1.Income
- 2.Employment
- 3.Education
- 4.Health
- 5.Crime
- 6.Barriers
- 7.Living

● Median ● Score rank (higher=better)
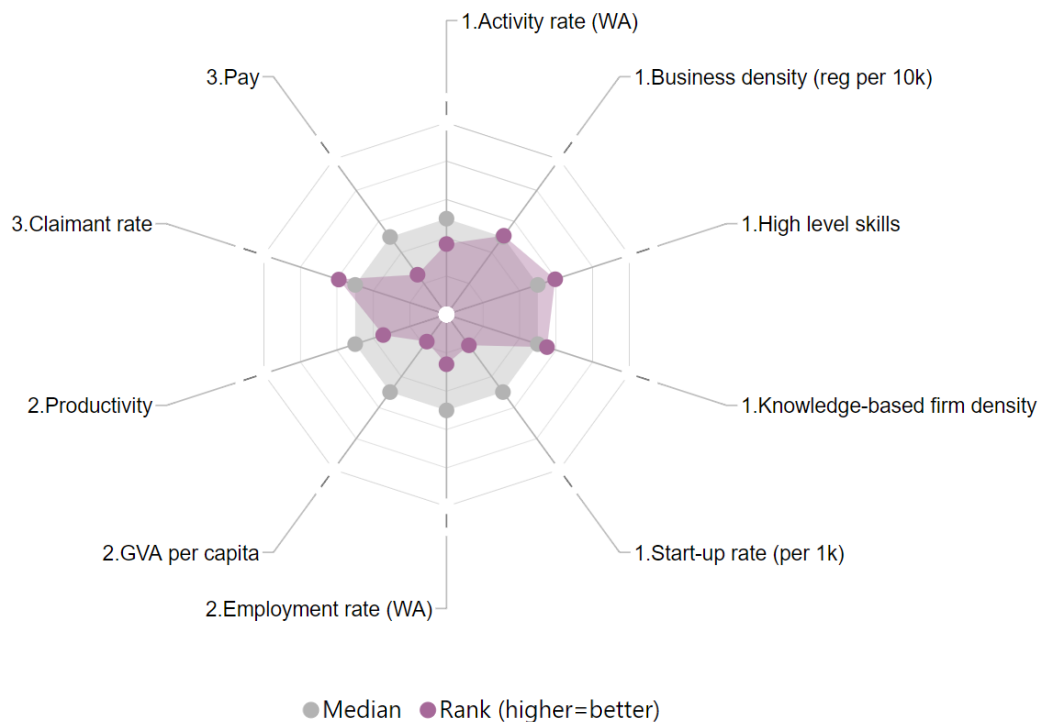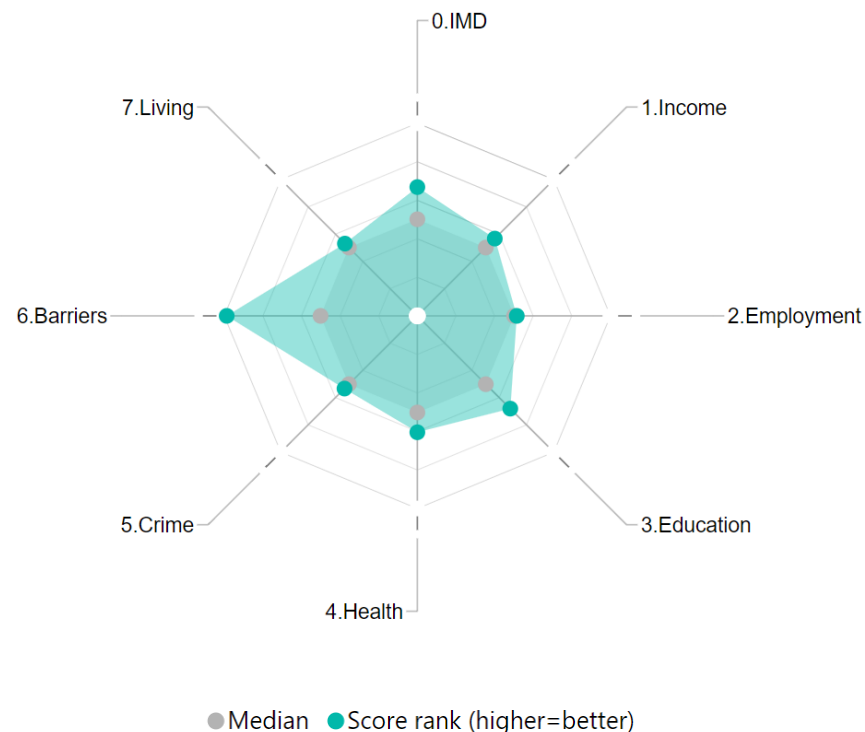
Places: Local Authority Rankings

Rural-Urban Classification: Urban with City and Town

UKCI

Ashfield

- 1.Activity rate (WA)
- 1.Business density (reg per 10k)
- 1.High level skills
- 1.Knowledge-based firm density
- 1.Start-up rate (per 1k)
- 2.Employment rate (WA)
- 2.GVA per capita
- 2.Productivity
- 3.Claimant rate
- 3.Pay

●Median ●Rank (higher=better)

IMD

Ashfield

- 0.IMD
- 1.Income
- 2.Employment
- 3.Education
- 4.Health
- 5.Crime
- 6.Barriers
- 7.Living

●Median ●Score rank (higher=better)

Source: D2N2 visualisation of 2019 UK Competitiveness Index data, Nottingham Business School; and 2015 Index of Multiple Deprivation, DCLG

IMD and UKCI:
Mansfield
Nottinghamshire

Rural-Urban Classification: Urban with City and Town

UKCI

Mansfield

- 1.Activity rate (WA)
- 1.Business density (reg per 10k)
- 3.Pay
- 1.High level skills
- 3.Claimant rate
- 1.Knowledge-based firm density
- 2.Productivity
- 1.Start-up rate (per 1k)
- 2.GVA per capita
- 2.Employment rate (WA)

● Median ● Rank (higher=better)

IMD

Mansfield

- 0.IMD
- 7.Living
- 1.Income
- .Barriers
- 2.Employment
- 5.Crime
- 3.Education
- 4.Health

● Median ● Score rank (higher=better)
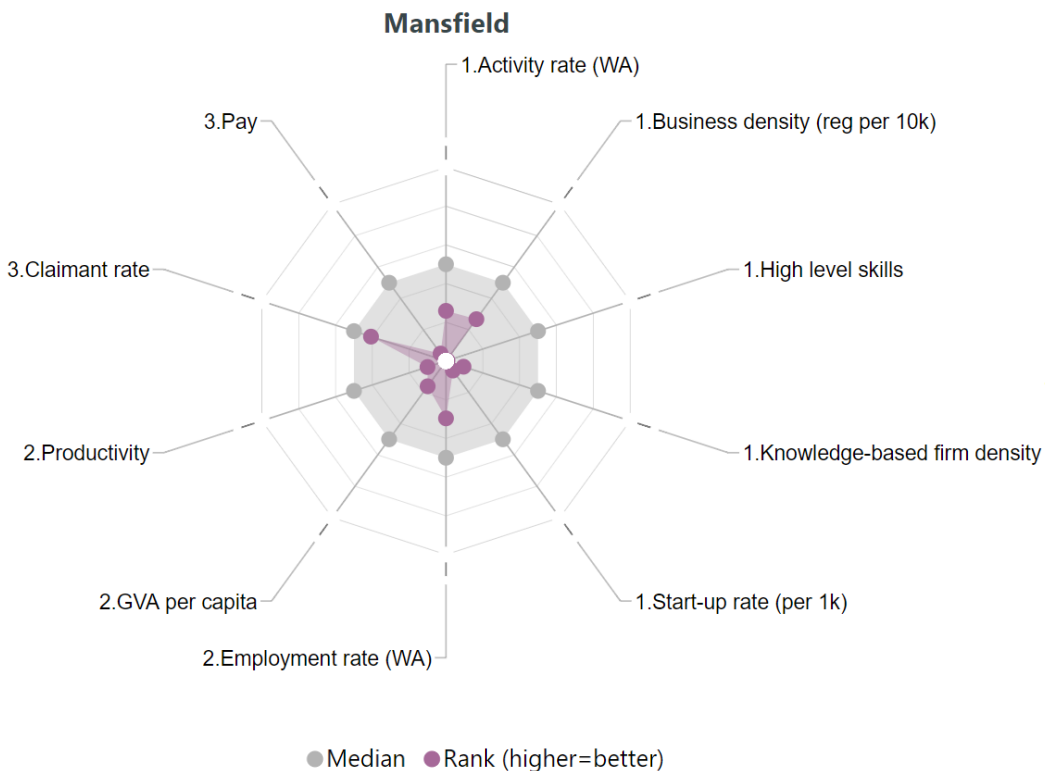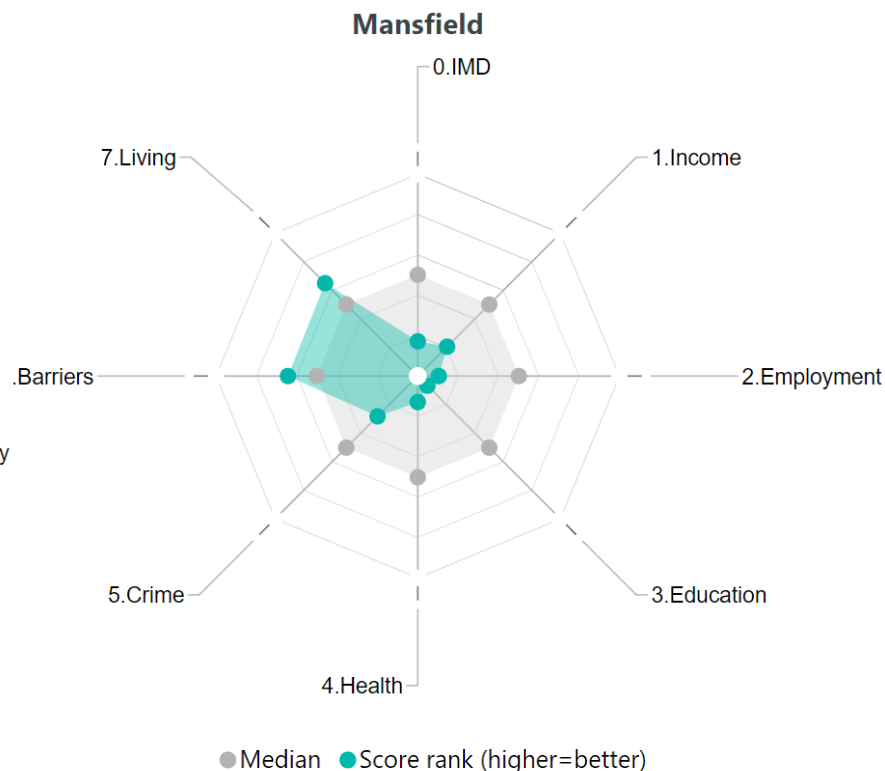
Newark & Sherwood

Nottinghamshire
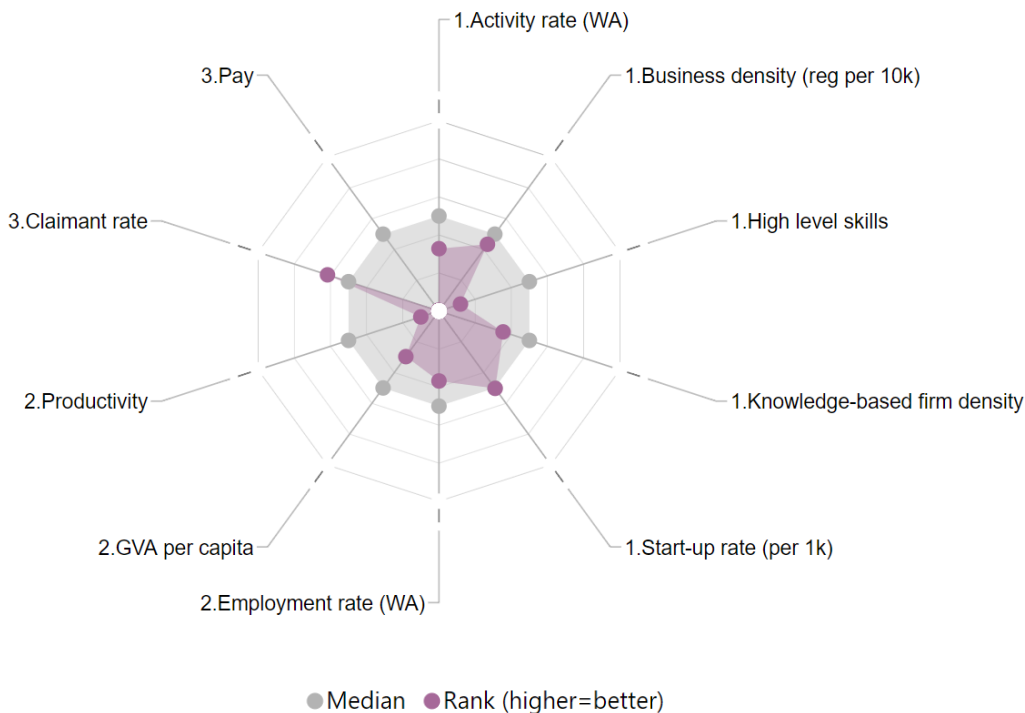
Rural-Urban Classification: Largely Rural

Places:
Local
Authority
Rankings

UKCI

Newark and Sherwood

- Median
- Rank (higher=better)

IMD

Newark and Sherwood

- Median
- Score rank (higher=better)
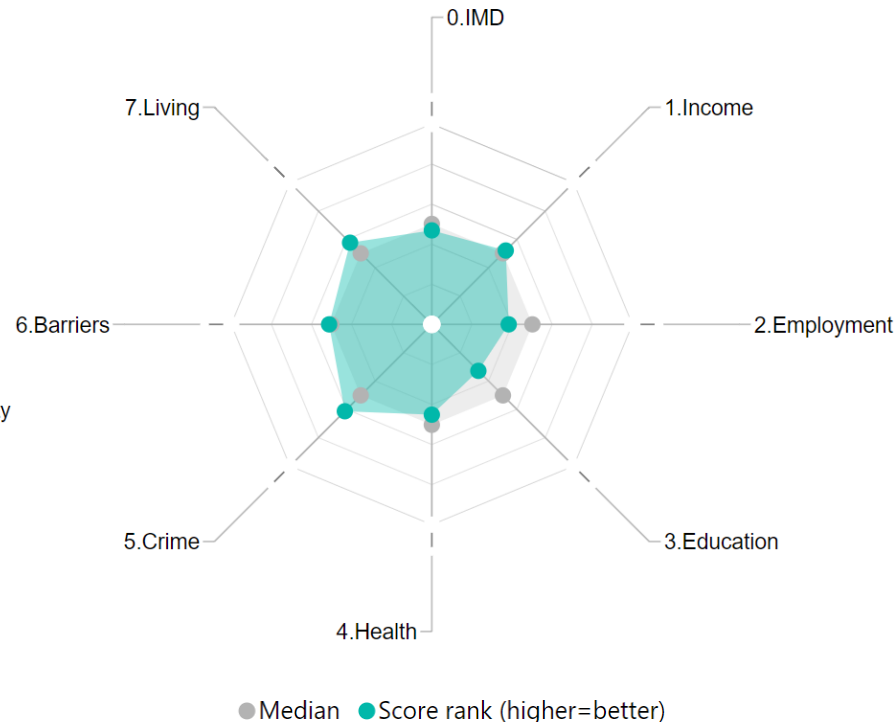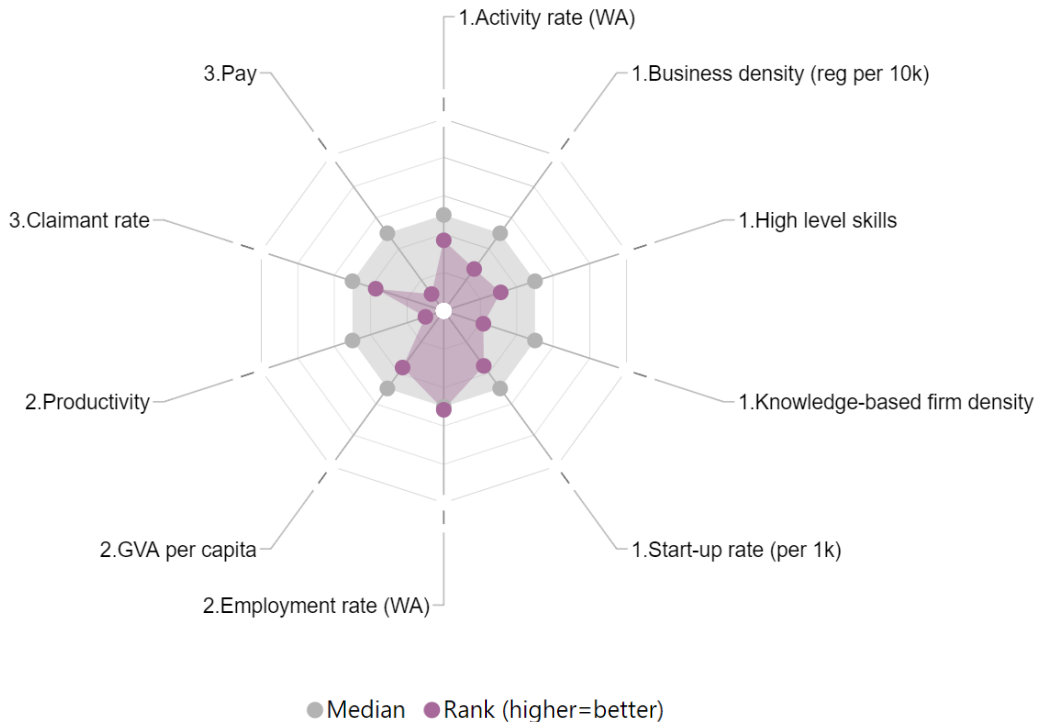
Bassetlaw
Nottinghamshire

Places:
Local
Authority
Rankings

Rural-Urban Classification: Largely Rural

UKCI

Bassetlaw

- Median
- Rank (higher=better)

IMD

Bassetlaw

- Median
- Score rank (higher=better)
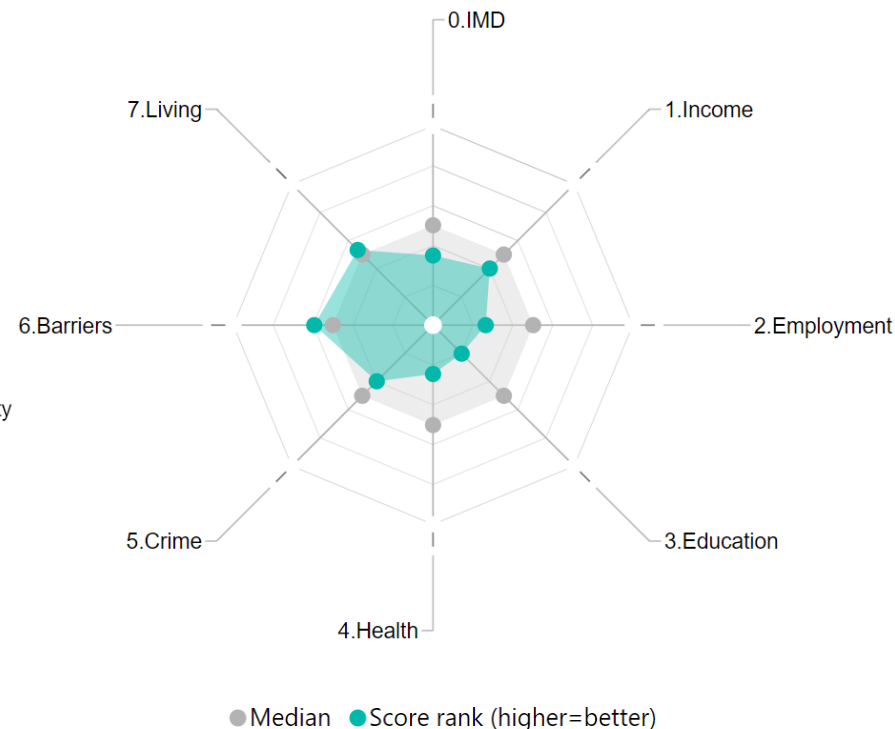
Typical morning peak hour traffic in Derbyshire

North Derbyshire
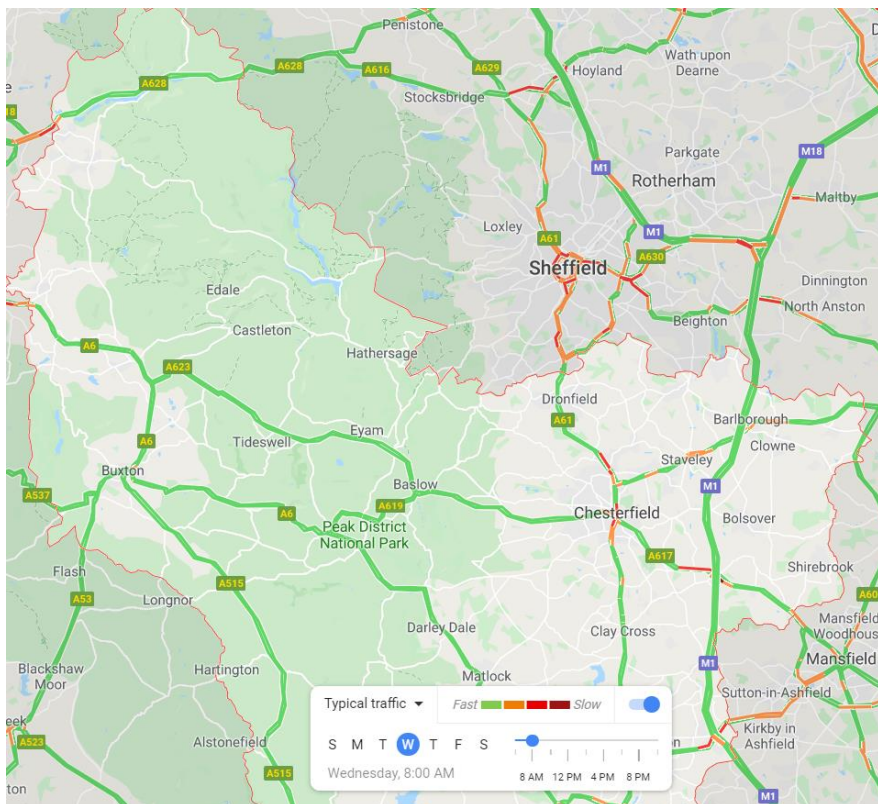
South Derbyshire
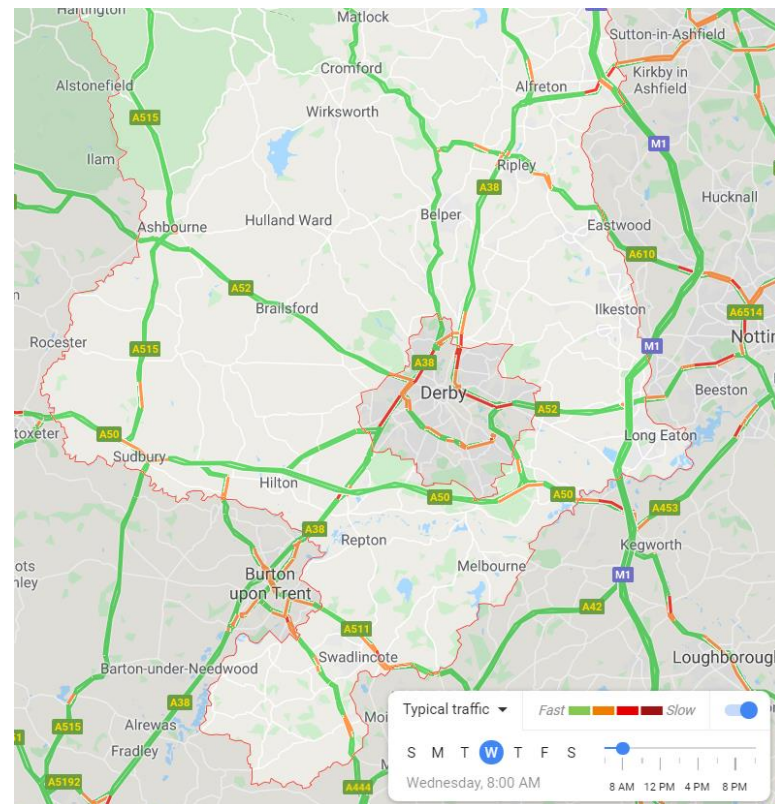
Note: The maps show typical traffic patters during morning peak hours. Source: Google Maps;
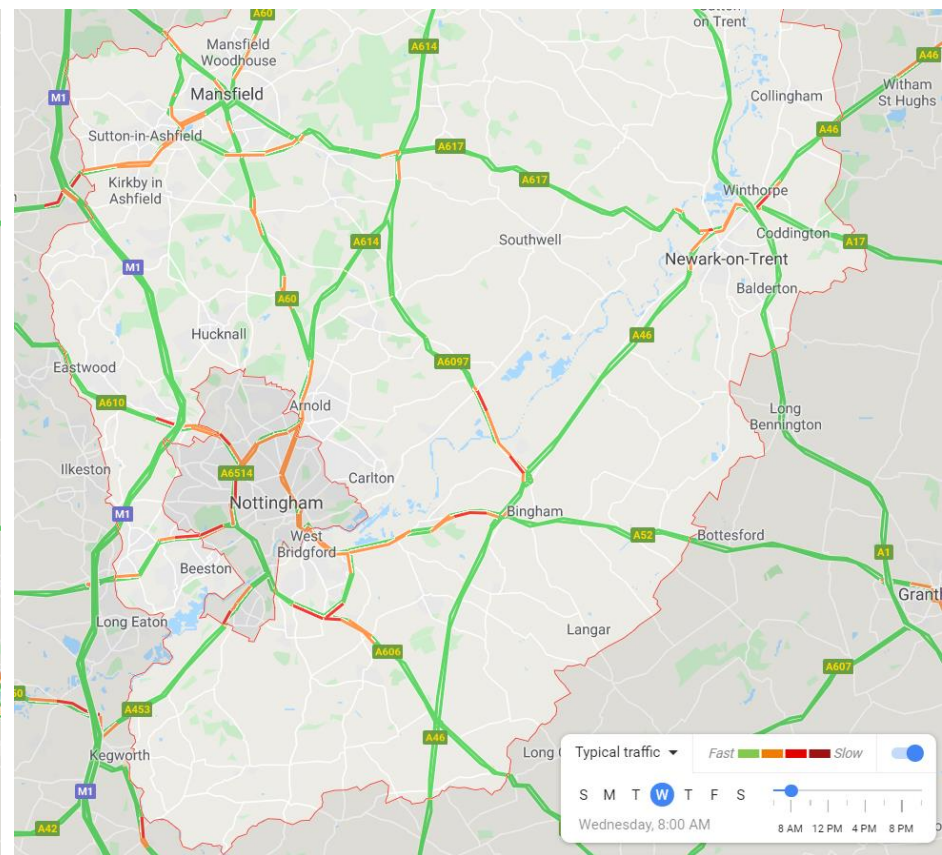
Typical morning peak hour traffic in Nottinghamshire

North Nottinghamshire

South Nottinghamshire

Note: The maps show typical traffic patters during morning peak hours. Source: Google Maps;