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.
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 five pillars of the UK National Industrial Strategy and the four grand challenges 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:

Dr Eugene Michaels, University of Derby
Professor Warren Manning, University of Derby
Professor Richard Kneller, University of Nottingham
Professor Piers Robinson, Nottingham Trent University
Associate Professor Will Rossiter, Nottingham Trent University
Aly Hendy, University of Nottingham MSc student
Daniel Marlowe, University of Nottingham MSc student
Jose Henrique Everton, University of Nottingham MSc student
Greg Broughton, James Hobson, Kane Cunliffe, and Andrew Nickolls, Environment Agency
David Parker, Natural England
Chris Hobson and Ian Bates, East Midlands Chamber
Laura Howe, Michael Evans and Fen Jones, Derbyshire County Council
Nicola McCoy-Brown and Chris Williams, Nottinghamshire County Council

We also thank Dai Larner, Frank Horsley, Helen Pakpahan, Giles Dann, and John Walker for their detailed consultation feedback and input.
D2N2

Derby, Derbyshire, Nottingham and Nottinghamshire

**Overview**

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

**Rank**

- Area: 12
- Population: 5
- Working age population: 5
- Average self-containment: 8
- GVA: 9
- Exports (goods): 6
- Local Authorities: 3
- LGF allocation: 15
- ESIF allocation: 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 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**

---

Source: * ONS, current price estimates (balanced), 2017. ** NOMIS, Business Register and Employment Survey (BRES)
D2N2 is forecast to expand by £7.6 billion and 35,000 jobs by 2030.

Source: D2N2 analysis of Cambridge Econometrics forecasts for Midlands Engine
D2N2 growth is forecast to be slightly below the Midlands Engine average.
Health & Social Work, Information & Communication, and Trade sectors are forecast to grow output value faster than other sectors.

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: 103
- France: 106
- Germany: 109
- 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.

14% below the national average

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.

Making up only 2.3% of the economy, other services include activities of membership organisations & repair of personal goods.
There is significant variation in productivity performance across D2N2. Areas to the south of the cities and along M1 record better performance:

- 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.

Aggregate productivity can be calculated as the weighted sum of each individual business 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.

Source: D2N2 Productivity Gap report, 2018
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.

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.

Source: D2N2 Productivity Gap report, 2018
We can improve productivity by focusing on business-level (within-firm) and business environment (between-firm) factors.

Within Firm
- Creation of new technologies
- Adoption of new technologies
- Management Practice and Organisation
- Efficient use of these technologies

Between Firm
- 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

Source: D2N2 Productivity Gap report, 2018
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.
Manufacturing and Trade added most value while Professional, Administrative & Accommodation services, as well as Transportation & Storage grew faster than nationally.

Source: * ONS, current price estimates (balanced), 2017. ** NOMIS, BRES, 2017
Manufacturing is the largest and most concentrated sector compared to the GB average.

Source: ONS, current price estimates (balanced), 2017.
Most of our strengths are in Manufacturing sub-sectors, Information Services, Transport & Logistics, and Wholesale Trade.

*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.

*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.

Note: Only sectors identifiable using 2-digit SIC codes included. Life sciences. Source: * ONS, current price estimates (balanced), 2017.
Transport Equipment Manufacturing
sector overview

Business composition

205 businesses

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)

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
Food & Drink Manufacturing
sector overview

Business composition

275 businesses

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)

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
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.)

Priority Sectors

Business composition

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

Top companies

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

Creative and Digital sector overview

Sector indicators

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

Business composition

- 4,200 businesses

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 – Microsoft, IBM, QinetiQ, ARM

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

Priority sectors

Sector indicators

- Employment (FTE): 60,813
- Productivity: £32,576
- Growth (2012-17): 27.3%
- LQ: 0.8
- GVA: £2.0bn

Business composition

6,100 businesses

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.

Source: D2N2 analysis of Visit Britain data compiled by the Midlands Engine Economic Observatory. Three-year averages (2015-17) of visitor spending and trips are used.
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 innovation ecosystem is geared towards productivity improvement
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

Source data and reports published by the Smart Specialisation Hub
D2N2 is one of the 12 LEPs exceeding the 2.4% of GDP R&D expenditure target set by the Government.

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:
- Business: 86%
- Higher Education: 11%
- Government & Research Councils: 4%

Composition of UK gross domestic expenditure on R&D:
- Business: 66%
- Higher Education: 25%
- Government & Research Councils: 7%
- Private Non-Profit: 2%

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)**

**Regional Data**

- **Derbyshire**: 400, 100, 15
- **Nottinghamshire**: 280, 70, 15
- **Nottingham**: 220, 90, 15
- **Derby**: 170, 20, 15

**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.

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

Source: ERC, Benchmarking local innovation – the innovation geography of England: 2019
However, a relatively small percentage of businesses engage in product or service innovation.
Below average Higher Education spending on research R&D but above average involvement in innovative research production.

**Idea:**
- Higher Education R&D

**Graph:**
- **Higher Education Spending on R&D (HERD)**
- **Indicator of Staff Submitted for Involvement in Innovative Research Production to the Research Excellence Framework (REF)**

<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>(S1) Medicine &amp; Dentistry</td>
<td>1.39</td>
</tr>
<tr>
<td>(S2) Subjects Allied to Medicine</td>
<td>0.94</td>
</tr>
<tr>
<td>(S3) Biological Sciences</td>
<td>1.81</td>
</tr>
<tr>
<td>(S4/S5) Veterinary Science &amp; Agriculture</td>
<td>5.82</td>
</tr>
<tr>
<td>(S6) Physical Sciences</td>
<td>1.29</td>
</tr>
<tr>
<td>(S7) Mathematical Sciences</td>
<td>1.34</td>
</tr>
<tr>
<td>(S8) Computer Science</td>
<td>1.51</td>
</tr>
<tr>
<td>(S9) Engineering &amp; Technology</td>
<td>1.66</td>
</tr>
<tr>
<td>(S10) Architecture</td>
<td>2.70</td>
</tr>
</tbody>
</table>

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.

**Source:** Smart Specialisation Hub
Above average innovation in business and industry

Ideas: Business R&D

Source: Smart Specialisation Hub

4. Figures are from ONS BERD for 2015, special tabulation performed using Secure Research. 5. Figures are for March 2014 to March 2018 and were extracted on 22nd March 2018 from Service. Figures are relative to figures for employment (FTE) from ONS Business Register in Innovate UK’s website. Employment Survey 2015.
Above average higher education and business interaction in innovation

<table>
<thead>
<tr>
<th>Interactions Between HE Institutions &amp; Business$^9$</th>
<th>Average = 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultancy Research (SMEs)</td>
<td>1.21</td>
</tr>
<tr>
<td>Contract Research (SMEs)</td>
<td>2.85</td>
</tr>
<tr>
<td>Consultancy Research (large businesses)</td>
<td>2.24</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of Active Graduate Start-ups$^{11}$</th>
<th>Average = 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.79</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employment by Science &amp; Technology Category$^6$</th>
<th>Average = 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital Technologies</td>
<td>0.96</td>
</tr>
<tr>
<td>Life Sciences &amp; Healthcare</td>
<td>1.22</td>
</tr>
<tr>
<td>Publishing &amp; Broadcasting</td>
<td>0.48</td>
</tr>
<tr>
<td>Other Sci &amp; Tech Manufacture</td>
<td>1.84</td>
</tr>
<tr>
<td>Other Sci &amp; Tech Services</td>
<td>1.12</td>
</tr>
</tbody>
</table>

6. Figures are extracted from the Inter Departmental Business Register by GNS for 2016.
9. Figures are for income for consultancy and contract R&D, HEBO, 2014/15 and 2015/16. Figures are an average for the two years.
11. Figures are from HEBO 2015/2016 for the number of graduate start ups which have survived three years.

Source: Smart Specialisation Hub
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

Source: Innovate UK, June 2019. Location shows the lead participant’s 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
Total population for D2N2 is over **2.2 million** residents split almost evenly between Derby-Derbyshire and Nottingham-Nottinghamshire.

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:

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Derby</td>
<td>260,300</td>
<td>3.36</td>
<td>4.91</td>
</tr>
<tr>
<td>Derbyshire</td>
<td>795,000</td>
<td>2.36</td>
<td>4.16</td>
</tr>
<tr>
<td>Nottingham</td>
<td>331,300</td>
<td>6.82</td>
<td>6.35</td>
</tr>
<tr>
<td>Nottinghamshire</td>
<td>826,100</td>
<td>3.91</td>
<td>6.40</td>
</tr>
<tr>
<td>UK</td>
<td>66,040,229</td>
<td>3.70</td>
<td>5.87</td>
</tr>
</tbody>
</table>

Source: University of Derby analysis of ONS and NOMIS data
Derby and Nottingham have larger proportions of under 50 years old residents than Derbyshire and Nottinghamshire, have higher proportions of older residents.

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.

Source: University of Derby analysis of ONS and NOMIS data
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.

Source: University of Derby analysis of population estimates, NOMIS (2019)
Both Derby and Nottingham have more diverse populations than nationally.

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.

D2N2 enjoys a net inflow of people.

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.

**Internal Migration (2017)**

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

**Net Migration by age (2017)**

<table>
<thead>
<tr>
<th></th>
<th>Derby</th>
<th>Derbyshire</th>
<th>Nottingham</th>
<th>Nottinghamshire</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 19</td>
<td>450</td>
<td>-630</td>
<td>7040</td>
<td>-180</td>
</tr>
<tr>
<td>20 - 34</td>
<td>-1030</td>
<td>2970</td>
<td>-6880</td>
<td>2250</td>
</tr>
<tr>
<td>35 - 49</td>
<td>-410</td>
<td>1580</td>
<td>-950</td>
<td>1480</td>
</tr>
<tr>
<td>50 - 64</td>
<td>-260</td>
<td>790</td>
<td>-210</td>
<td>340</td>
</tr>
<tr>
<td>65+</td>
<td>50</td>
<td>360</td>
<td>-180</td>
<td>490</td>
</tr>
</tbody>
</table>
63% of overseas nationals are from the 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).

EU2: Bulgaria and Romania – 39% of EU
EU8: Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia – 33% of EU
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.

<table>
<thead>
<tr>
<th>Economic activity rate</th>
<th>Employment Rate</th>
<th>Unemployment rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2017</td>
<td>2018</td>
</tr>
<tr>
<td>Derby</td>
<td>74.5</td>
<td>77.4</td>
</tr>
<tr>
<td>Derbyshire</td>
<td>80.2</td>
<td>81.6</td>
</tr>
<tr>
<td>Nottingham</td>
<td>62.5</td>
<td>67.4</td>
</tr>
<tr>
<td>Nottinghamshire</td>
<td>79.2</td>
<td>77.0</td>
</tr>
<tr>
<td>UK</td>
<td>78.2</td>
<td>78.3</td>
</tr>
</tbody>
</table>

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.

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.

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.

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.

**Economically Inactive Residents by Reason in D2N2**

- Student
- Looking after family/home
- Temporary sick
- Long-term sick
- Discouraged
- Retired
- Other

**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

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.

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.

Source: University of Derby analysis of attainment data published by the Department for Education; DfE EBacc guidance
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

<table>
<thead>
<tr>
<th></th>
<th>Full time education and training</th>
<th>Apprenticeship</th>
<th>Work based learning</th>
<th>Employment combined with study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Derby</td>
<td>73%</td>
<td>8%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Derbyshire</td>
<td>6%</td>
<td>9%</td>
<td>5%</td>
<td>1%</td>
</tr>
<tr>
<td>Nottingham</td>
<td>84%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Nottinghamshire</td>
<td>87%</td>
<td>4%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>East Midlands</td>
<td>83%</td>
<td>6%</td>
<td>1.5%</td>
<td>0.6%</td>
</tr>
<tr>
<td>England</td>
<td>84%</td>
<td>6%</td>
<td>6%</td>
<td>0.7%</td>
</tr>
</tbody>
</table>

Source: University of Derby analysis of Department for Education data – NEET and participation: local authority figures (2018)
Both Derby and Nottingham experience higher than average NEET rates.

Note: A person is NEET if they are aged 16 to 24 and not in education, employment or training. Source: University of Derby analysis of Department for Education – NEET and participation: local authority figures (2018)
D2N2 has lower than average share of residents with higher qualifications and higher share of residents with low or no 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%.

Source: University of Derby analysis of ONS Annual Population Survey
Larger proportion of younger population is qualified to a higher level

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.

Source: University of Derby analysis of ONS Annual Population Survey
Rushcliffe has the most competitive skills profile in D2N2 with the highest proportion of its residents with higher qualifications (62%).

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).

Source: University of Derby analysis of ONS Annual Population Survey
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.

Source: University of Derby analysis of ONS Annual Population Survey
D2N2 has lower proportion of managers, professionals and technical workers, and higher proportion of lower skilled occupations.

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.

Source: University of Derby analysis of ONS Annual Population Survey
Rushcliffe has the highest proportion of population working in high level roles (46%), which reflects the higher proportion of high skills of its residents. 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.

Source: University of Derby analysis of ONS Annual Population Survey
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.

Source: University of Derby analysis of ONS Annual Population Survey
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.

Source: University of Derby analysis of ONS Business Register and Employment Survey
D2N2 have fewer vacancies per establishment with vacancies than the national average (2.7).

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.

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

Source: University of Derby analysis of Employer Skills Survey
57% identified the quality of applicants as the main reason for unfilled vacancies.

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.

Source: University of Derby analysis of DfE, Employer Skills Survey
Resident earnings in D2N2 are below regional and national levels

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.

Source: University of Derby analysis of ONS Annual survey of hours and earnings - resident analysis (2018)
D2N2 have a higher proportion of jobs paying below the living wage than the UK average

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).

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 Annual survey of hours and earnings (2018)
Over 57,400 jobs are D2N2 at high risk of automation. Around 413,000 more jobs will likely experience various degrees of task 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.

Source: ONS, ‘Which occupations are at highest risk of being automated?’ dataset, March 2019; DfE, Number of students at the end of key stage 5
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.

Source: ONS, ‘Which occupations are at highest risk of being automated?’ data, March 2019
13 out of 17 local authorities have been identified as social mobility coldspots*

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.
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
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.

Source: Midlands Connect Strategy, 2017. Transport for the North Strategic Transport Plan, 2019
D2N2 cities and towns suffer from congestion, which results in higher costs to businesses and local communities.

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.
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 Uttoxeter 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

Source: ONS; Department for Transport
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.

**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.

Source: East Midlands Councils; Midlands Connect
\(1\) - East Midlands HS2 Growth Strategy – Projections by 2043
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.

- 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.

Source: Midlands Connect Rail Hub 2019, Midlands Connect Strategy 2017
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, known as Major Road Network and a pipeline of projects.

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

Source: Ofcom, 2019
3% of premises are still unable to access a fixed broadband service that delivers a decent broadband connection.
Both domestic and non-domestic electricity consumption make up 3.3% of GB. Consumption distribution within D2N2 reflects residential and industrial densities.

Infrastructure: Electricity

Domestic electricity consumption

Non-domestic electricity consumption

Legend

Strategic Road Network
- A-Road
- A(M)-Road
- Motorway

D2N2 Boundaries

LA_Domestic consumption (GWh)
- 0 - 133
- 133 - 162
- 162 - 181
- 181 - 202
- 202 - 234
- 234 - 265
- 265 - 307
- 307 - 359
- 359 - 459
- 459 - 1562

Legend

Strategic Road Network
- A-Road
- A(M)-Road
- Motorway

D2N2 Boundaries

LA_Non domestic consumption (GWh)
- 0 - 171
- 171 - 222
- 222 - 251
- 251 - 288
- 288 - 331
- 331 - 393
- 393 - 467
- 467 - 577
- 577 - 862
- 862 - 1342

Source: Department for Business; Department for Transport
A recent study by National Grid gives 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 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%)

**Infrastructure: Housing**

**Dwelling stock - D2N2**

- Private sector (F1): 812.59K (83.62%)
- Private Registered Provider: 60.76K (6.25%)
- Local Authority (incl. owned ...): 98.08K (10.09%)

**Dwelling stock - England**

- Private sector (F1): 20M (82.73%)
- Private Registered Provider: 1.59M (6.59%)
- Local Authority (incl. owned ...): 2.54M (10.5%)

**971,790**

Dwelling Stock

**24.17M**

Dwelling Stock

**Source:** Ministry of Housing, Communities & Local Government: LT_100: number of dwellings by tenure and district, England (https://www.gov.uk/government/statistical-data-sets/live-tables-on-dwelling-stock-including-vacants)
Home ownership is slightly higher in D2N2 (78.5%) than nationally (76.9%).

Dwelling Stock By Tenure

- Owner Occupied: 631.7K (78.5%)
- Privately Rented: 172.8K (21.5%)

Owner occupied(%) by LAD

- Nottingham: 64.4%
- Rushcliffe: 87.6%

Recent growth in dwelling stock is lower than nationally in most of the D2N2 local authorities.

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

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

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

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.
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
D2N2 has second largest business stock among Midlands Engine LEPs

78,500
Businesses

Source: D2N2 analysis of ONS Business Demography data (2017) compiled by the Midlands Engine Observatory
D2N2 overall business density is 19.4% lower than average, while density in Derbyshire Dales, Rushcliffe and Broxtowe is above the UK average.

Source: D2N2 analysis of ONS Business Demography data (2017) compiled by the Midlands Engine Observatory
Business births are lower in D2N2 than nationally

### Business Births in Midlands Engine LEPs

- 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

**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**

**Source:** Scale Up Institute, Find a ScaleUp business; ScaleUp Index, 2018
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.

Source: ERC, UK local growth dashboard, 2019
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*

Source: DIT, Inward Investment Results tables, 2019  
Note: *Cumulative projects and jobs in the East Midlands from 2013-14 to 2017-18
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

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

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.

Source: HMRC, Regional trade in goods statistics, 2017, reported for NUTS2 geographies
Exports of Information and Communication services are in the top 10 areas

Source: ONS, Services exports – experimental statistics, 2016, reported for NUTS2 geographies
Business Environment: 
Exports to and Imports from the EU

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

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 and overseas markets.

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.

Source: D2N2 analysis of East Midlands Chamber’s Quarterly Economic Survey data (Q4 2018-19). Average n=231.
The fall in business confidence is also reflected in the declining percentage of businesses which have attempted to recruit.

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.

**Source:** D2N2 analysis of East Midlands Chamber’s Quarterly Economic Survey data (Q4 2018-19). Average n=231.
Declining confidence is also reflected in restrained intentions to invest in both fixed and human capital.

Source: D2N2 analysis of East Midlands Chamber’s Quarterly Economic Survey data (Q4 2018-19). Average n=231.
Local businesses are most concerned about **access to skills, competition and exchange rates.**

**What concerns you most (March 2019)**

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

**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.

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.

Source: CBI, Impact of a ‘no deal’ Brexit across the UK; BRES, ONS, regional GVA
29% of respondents think that 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.

---

Business Environment: Brexit

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

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

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):

- 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%

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.

Source: East Midlands Chamber’s Quarterly Economic Survey – Q2 2018. n=43
More than 60% of businesses expressed various degrees of concern about potential changes in regulatory regime, workforce access, contracts and tariffs.

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: 19%
  - Extremely exposed: 12%
  - Not at all exposed: 24%
  - Somewhat exposed: 45%

- **Intellectual Property requirements**
  - A little exposed: 12%
  - Extremely exposed: 6%
  - Not at all exposed: 32%
  - Somewhat exposed: 50%

- **Procedures at UK/EU borders**
  - A little exposed: 17%
  - Extremely exposed: 13%
  - Not at all exposed: 22%
  - Somewhat exposed: 48%

- **EU-led funding streams**
  - Not exposed: 53%
  - Exposed: 15%

- **Rules of Origin**
  - Not exposed: 53%
  - Exposed: 18%

*Source: East Midlands Chamber's Quarterly Economic Survey – Q2 2018. Average n=189*
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
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
Places: Travel to Work

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.**

- 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.

Source: D2N2 Skills and Employability Strategy 2017-20, analysis of ESFA datacube 2012-2015
D2N2 wholly contains **6 housing market areas**, two of which cross City or County administrative 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

<table>
<thead>
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<td>Cities</td>
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<td>Derby</td>
<td>£ 53,023</td>
<td>£ 26,817</td>
<td>£ 31,991</td>
<td>£ 36,156</td>
<td>79.3%</td>
<td>71.3%</td>
<td>31.9%</td>
<td>5.06</td>
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<td>Nottingham</td>
<td>£ 42,770</td>
<td>£ 29,361</td>
<td>£ 23,288</td>
<td>£ 26,329</td>
<td>71.0%</td>
<td>57.4%</td>
<td>30.1%</td>
<td>5.53</td>
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<td>44</td>
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<td>Amber Valley</td>
<td>£ 52,780</td>
<td>£ 20,961</td>
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<td>78.9%</td>
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<td>£ 22,377</td>
<td>£ 24,925</td>
<td>£ 23,802</td>
<td>77.1%</td>
<td>66.7%</td>
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<td>Chesterfield</td>
<td>£ 44,600</td>
<td>£ 21,324</td>
<td>£ 26,070</td>
<td>£ 26,071</td>
<td>74.8%</td>
<td>73.6%</td>
<td>25.8%</td>
<td>5.29</td>
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<td>Derbyshire Dales</td>
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<td>£ 21,670</td>
<td>£ 30,882</td>
<td>£ 27,126</td>
<td>86.9%</td>
<td>79.4%</td>
<td>47.4%</td>
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<td>£ 16,836</td>
<td>£ 27,821</td>
<td>£ 23,702</td>
<td>80.0%</td>
<td>81.9%</td>
<td>43.0%</td>
<td>6.14</td>
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<td>High Peak</td>
<td>£ 48,438</td>
<td>£ 16,836</td>
<td>£ 27,821</td>
<td>£ 23,702</td>
<td>80.0%</td>
<td>81.2%</td>
<td>27.3%</td>
<td>6.61</td>
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<td>North East Derbyshire</td>
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<td>£ 12,602</td>
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<td>£ 28,215</td>
<td>80.0%</td>
<td>81.2%</td>
<td>27.3%</td>
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<td>South Derbyshire</td>
<td>£ 79,419</td>
<td>£ 24,046</td>
<td>£ 32,939</td>
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<tr>
<td>Nottinghamshire</td>
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<tr>
<td>Ashfield</td>
<td>£ 52,788</td>
<td>£ 21,757</td>
<td>£ 25,366</td>
<td>£ 25,396</td>
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<td>£ 18,847</td>
<td>£ 28,431</td>
<td>£ 24,565</td>
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<td>73.2%</td>
<td>31.5%</td>
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<td>Broxtowe</td>
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<td>£ 29,557</td>
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<td>38.8%</td>
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<td>Gedling</td>
<td>£ 45,344</td>
<td>£ 12,388</td>
<td>£ 29,073</td>
<td>£ 32,691</td>
<td>79.8%</td>
<td>75.3%</td>
<td>38.7%</td>
<td>5.96</td>
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<td>35</td>
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<td>Mansfield</td>
<td>£ 38,325</td>
<td>£ 14,119</td>
<td>£ 23,870</td>
<td>£ 22,922</td>
<td>82.4%</td>
<td>73.3%</td>
<td>17.5%</td>
<td>5.43</td>
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<td>Newark and Sherwood</td>
<td>£ 47,653</td>
<td>£ 19,303</td>
<td>£ 27,255</td>
<td>£ 23,081</td>
<td>67.7%</td>
<td>80.1%</td>
<td>26.0%</td>
<td>6.78</td>
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<td>Rushcliffe</td>
<td>£ 58,585</td>
<td>£ 20,708</td>
<td>£ 34,790</td>
<td>£ 30,228</td>
<td>82.3%</td>
<td>80.9%</td>
<td>46.0%</td>
<td>7.21</td>
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<td>Benchmark</td>
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<tr>
<td>Midlands Engine (64)</td>
<td>£ 50,758</td>
<td>£ 22,097</td>
<td>£ 28,141</td>
<td>£ 26,723</td>
<td>75.7%</td>
<td>72.8%</td>
<td>31.5%</td>
<td>6.59</td>
<td>385</td>
<td>48</td>
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<tr>
<td>England</td>
<td>£ 60,523</td>
<td>£ 28,096</td>
<td>£ 29,869</td>
<td>£ 29,872</td>
<td>78.0%</td>
<td>75.1%</td>
<td>38.3%</td>
<td>7.91</td>
<td>464</td>
<td>58</td>
</tr>
</tbody>
</table>

**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**

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.

Source: Department for Environment, Food & Rural Affairs, Environment Agency, Natural England
There are apparent inequalities in natural capital, environmental quality and public engagement in the D2N2 area.

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

Note: lower percentile = better quality  
Source: Environment Agency, Natural England
Water resources are under pressure across D2N2 area and are carefully managed.

Places:
Water quality

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

**Note:** lower percentile = better quality; *pollination, waste remediation, carbon storage.

**Source:** Environment Agency, Natural England
Quality of access to the natural environment is a valuable capital asset to quality of life and place making.

Places: Green space

Note: lower percentile = better quality  Source: Environment Agency, Natural England
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
- Minimising Waste
  (Fly Tipping & Household Recycling)

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*. 

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**

- **Nottingham**
  - Urban with Minor Conurbation: 225K
  - Urban with City and Town: 131K
  - Largely Rural: 51K
  - Urban with Significant Rural: 53K
  - Mainly Rural: 52K

- **NE Derbyshire**
  - Urban with Minor Conurbation: 28K
  - Urban with City and Town: Mansfield 41K
  - Largely Rural: Newark & Sh. 51K
  - Urban with Significant Rural: High Peak 33K
  - Mainly Rural: Bassetlaw 50K

- **Derby**
  - Urban with Minor Conurbation: 42K
  - Urban with City and Town: Chesterfield 51K
  - Largely Rural: Bolsover 30K
  - Urban with Significant Rural: South Derbyshire 33K
  - Mainly Rural: Derbyshire Dales 35K

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

**Source:** D2N2 analysis of data compiled by DEFRA
More productive places tend to have higher resident earnings.

Source: D2N2 analysis of data compiled by DEFRA
Rural areas have lower broadband speeds.

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

**Source:** Nottinghamshire County Council analysis
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.

**Places:** Urban-rural split

**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

**Source:** Nottinghamshire County Council analysis
People with higher qualifications (NVQ 4+) travel further for work, especially from rural areas.

Source: Nottinghamshire County Council analysis
While median resident earnings in rural areas are higher, workplace-based earnings are slightly lower compared to urban areas.

Source: Nottinghamshire County Council analysis
Property prices are higher in rural areas. The market for existing dwellings tends to be more active in urban areas.

Source: Nottinghamshire County Council analysis
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.

Some urban areas trail behind the rest, with 10-year growth rates under 30% (Derby, Mansfield, and Chesterfield).
Urban populations are younger while rural areas have older workforce and higher proportion of retiring population.

Source: D2N2 and Nottinghamshire County Council analysis
Differences in geography lead to different service delivery issues*

<table>
<thead>
<tr>
<th>Factor</th>
<th>How it affects delivery costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance</td>
<td>Rural areas are far from major urban centres, which makes all forms of connectivity more expensive.</td>
</tr>
<tr>
<td>Population</td>
<td>Low levels of population make it hard to achieve a critical mass.</td>
</tr>
<tr>
<td>Density</td>
<td>Distance and low population levels result in low density and higher dispersion, which increases the costs of connecting people through markets or government action.</td>
</tr>
<tr>
<td>Economies of scale</td>
<td>Unit costs in small communities tend to be significantly higher than in large ones.</td>
</tr>
<tr>
<td>Additional travel costs</td>
<td>Greater distances imply increased travel for clients and workers and, for services taken to clients, there are additional transport costs.</td>
</tr>
<tr>
<td>High level of unproductive time</td>
<td>More time spent travelling results in higher levels of unproductive staff time.</td>
</tr>
<tr>
<td>Access to training, consultancy and other support services</td>
<td>Training requirements in more remote areas are inevitably more costly to fulfil.</td>
</tr>
<tr>
<td>Ageing population</td>
<td>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.</td>
</tr>
<tr>
<td>Decreasing subsidies</td>
<td>Macroeconomic conditions and increasing deficits often drive cost reduction which affects rural service delivery.</td>
</tr>
<tr>
<td>Increasingly diverse population</td>
<td>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.</td>
</tr>
<tr>
<td>Limited choice</td>
<td>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.</td>
</tr>
<tr>
<td>Weaker communication networks</td>
<td>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.</td>
</tr>
</tbody>
</table>
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.

Sources: Rural Proofing – Practical guidance to assess impacts of policies on rural areas DEFRA, March 2017. Time for a strategy for the rural economy – House of Lords Select Committee on the Rural Economy, March 2019.
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

<table>
<thead>
<tr>
<th>Input factors</th>
<th>Output factors</th>
<th>Outcome factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Activity Rates (working age), Sept 2019</td>
<td>Gross Value Added per head at current basic prices, 2017</td>
<td>Gross weekly pay (workplace), 2018</td>
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<tr>
<td>Business Start-up Rates per 1,000 Inhabitants, 2018</td>
<td>Productivity - Output per Hour Worked, 2017</td>
<td>Unemployment rates, claimant rate average in Jan, Mar, Sep, Dec 2017/18</td>
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<tr>
<td>Number of Business per 1,000 inhabitants, 2018</td>
<td>Employment Rates (working age), Jan-Dec 2017</td>
<td></td>
</tr>
<tr>
<td>Proportion of Working Age Population with NVQ Level 4+, Jan-Dec 2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion of Knowledge-Based Business, 2018</td>
<td></td>
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</tr>
</tbody>
</table>

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

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 it 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
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.

Source: English Indices of Deprivation 2015, DCLG
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).
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 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. It 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.

Source: People and Skills data Analysis Pack, University of Derby, 2019
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 Areas (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.
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.
Index of Multiple Deprivation: Income and Employment

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

**Places**

**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

Places

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
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 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%.

Overall, total CO₂ 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.

Source: UK local authority and regional CO2 emissions national statistics. Nottingham City Council Energy Services
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.

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.

**CO2 Emissions by LA**

- **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**

**Source:** UK local authority and regional CO2 emissions national statistics. Nottingham City Council Energy Services.
All end-users exceed national averages of emissions per head.

Emissions per head difference

- **34%** Industry
- **8%** Transport
- **5%** Domestic

2017 Emissions by Source

- Industry and Commercial Total: 44%
- Domestic Total: 31%
- Transport Total: 25%

D2N2 CO2 emissions per head by end-user group

- **34%** in Industry
- **8%** in Transport
- **5%** in Domestic

Source: UK local authority and regional CO2 emissions national statistics
Industry and Commercial emissions contributed 5.4 MtCO2 to D2N2’s CO2 emissions in 2017.

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.
There are 46 EU ETS installations in the D2N2 area. The three highest emitting installations (Cottam Power Station, Staythorpe Power Station, West Burton B) contribute more emissions than the other 43 that report CO2 emissions as part of the EU ETS in the D2N2.

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.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Number of installations</th>
<th>2017 tCO2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major power producers</td>
<td>6</td>
<td>3,553,170</td>
</tr>
<tr>
<td>Cement</td>
<td>1</td>
<td>282,503</td>
</tr>
<tr>
<td>Lime</td>
<td>3</td>
<td>192,745</td>
</tr>
<tr>
<td>Food, drink &amp; tobacco industry</td>
<td>5</td>
<td>53,894</td>
</tr>
<tr>
<td>Other mineral industries</td>
<td>7</td>
<td>39,506</td>
</tr>
<tr>
<td>Vehicles</td>
<td>4</td>
<td>27,570</td>
</tr>
<tr>
<td>Waste collection, treatment &amp; disposal</td>
<td>1</td>
<td>19,857</td>
</tr>
<tr>
<td>Public administration</td>
<td>5</td>
<td>19,596</td>
</tr>
<tr>
<td>Chemical industry</td>
<td>1</td>
<td>14,580</td>
</tr>
<tr>
<td>Minor power producers</td>
<td>7</td>
<td>11,512</td>
</tr>
<tr>
<td>Non-ferrous metal industries</td>
<td>1</td>
<td>7,182</td>
</tr>
<tr>
<td>Paper, printing &amp; publishing industries</td>
<td>2</td>
<td>6,310</td>
</tr>
<tr>
<td>Processing &amp; distribution of natural gas</td>
<td>1</td>
<td>954</td>
</tr>
<tr>
<td>Textiles, clothing, leather &amp; footwear</td>
<td>1</td>
<td>942</td>
</tr>
<tr>
<td>Iron &amp; steel industries</td>
<td>1</td>
<td>32</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>46</strong></td>
<td><strong>4,230,353</strong></td>
</tr>
</tbody>
</table>
Transport emissions equated to 4.5 MtCO₂ in 2017, making it the second highest sector for emissions.

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%).

Source: UK local authority and regional CO2 emissions national statistics. Nottingham City Council Energy Services
Domestic emissions accounted for 3.6 MtCO$_2$ in 2017, the lowest of the three main sectors.

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.

<table>
<thead>
<tr>
<th>Domestic Housing Stock EPCs</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>Percentage of Stock</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPC</td>
<td>0.2%</td>
<td>10.0%</td>
<td>28.1%</td>
<td>39.7%</td>
<td>17.4%</td>
<td>3.9%</td>
<td>0.8%</td>
</tr>
</tbody>
</table>
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.

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.

**Source:** UK local authority and regional CO2 emissions national statistics. Nottingham City Council Energy Services
A total (net) of 158 ktCO2 was sequestered through land use, land-use change, and forestry (LULUCF).

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.

Source: Nottingham City Council Energy Services
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%

| Source: Nottingham City Council Energy Services |

<table>
<thead>
<tr>
<th>Number of woodlands &gt;0.1 hectares</th>
<th>Woodland proportion of total area (includes inland water)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Derbyshire</td>
<td>19,513</td>
</tr>
<tr>
<td>Nottinghamshire</td>
<td>17,298</td>
</tr>
<tr>
<td></td>
<td>7.4%</td>
</tr>
<tr>
<td></td>
<td>8.0%</td>
</tr>
</tbody>
</table>

**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.

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.

Source: Total final energy consumption at local authority level, ONS. Nottingham City Council Energy Services
Estimates suggest that 2.95% of total energy consumption in D2N2 is from low carbon generation.

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 2°C and pursuant of a 1.5°C 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

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

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Clean Growth: Energy and Low Carbon Economy

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**Energy related grants are 14.5 times higher than average.**

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### Energy related grants offered by Innovate UK

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

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

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Source: Smart Specialisation Hub

**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).

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*Source: Science and Innovation Audit*
Grand Challenge: Future of Mobility

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

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

Opportunities

• 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
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).
Future of Mobility

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.
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

### Future of Mobility

#### Interactions Between HE Institutions & Business

<table>
<thead>
<tr>
<th>Service Type</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultancy Research (SMEs)</td>
<td>1.21</td>
</tr>
<tr>
<td>Contract Research (SMEs)</td>
<td>2.85</td>
</tr>
<tr>
<td>Consultancy Research (large businesses)</td>
<td>2.24</td>
</tr>
</tbody>
</table>

#### Institution & Co-authored Publications

<table>
<thead>
<tr>
<th>Institution</th>
<th>Co-authored Publications</th>
<th>Institution</th>
<th>Co-authored Publications</th>
</tr>
</thead>
<tbody>
<tr>
<td>JLR</td>
<td>20</td>
<td>Airbus Group</td>
<td>3</td>
</tr>
<tr>
<td>Rolls-Royce</td>
<td>18</td>
<td>Ford Motor</td>
<td>3</td>
</tr>
<tr>
<td>Network Rail</td>
<td>14</td>
<td>General Motors</td>
<td>3</td>
</tr>
<tr>
<td>General Electric</td>
<td>9</td>
<td>BMW Group</td>
<td>2</td>
</tr>
<tr>
<td>Alstom</td>
<td>6</td>
<td>Transport Systems Catapult</td>
<td>1</td>
</tr>
<tr>
<td>Arup Group</td>
<td>4</td>
<td>Transport Research Laboratory Limited</td>
<td>1</td>
</tr>
</tbody>
</table>
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.

Source: Innovate UK grants, 2004 - June 2019
Relatively low electric vehicle uptake but higher public transport usage in the cities than regionally.

**Future of Mobility**

**Regional EV Uptake 2018**

- North West
- North East
- D2N2
- East Midlands
- Yorkshire & the Humber
- London
- England
- South West
- South East
- West Midlands
- East

**Regional Annual Bus Journeys per Capita 2017/18**

- East
- D2N2
- South East
- South West
- East Midlands
- North West
- West Midlands
- Yorkshire & the Humber
- North East
- Derby
- Nottingham

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
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 CO₂ 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
Use data, Artificial Intelligence and innovation to transform the prevention, early diagnosis and treatment of chronic diseases by 2030.
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 than 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 capitalisation of investment is greater than the creative destruction of jobs.
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

Source: Accenture & PWC reports
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.

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

### Business functions in which AI has been adopted, by industry

<table>
<thead>
<tr>
<th>Business Functions</th>
<th>Service operations</th>
<th>Product and/or service development</th>
<th>Marketing and sales</th>
<th>Supply-chain management</th>
<th>Manufacturing</th>
<th>Risk</th>
<th>Human resources</th>
<th>Strategy and corporate finance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telecom</td>
<td>75</td>
<td>45</td>
<td>38</td>
<td>26</td>
<td>22</td>
<td>23</td>
<td>17</td>
<td>15</td>
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<tr>
<td>High tech</td>
<td>48</td>
<td>59</td>
<td>34</td>
<td>23</td>
<td>20</td>
<td>17</td>
<td>21</td>
<td>17</td>
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<tr>
<td>Financial services</td>
<td>49</td>
<td>26</td>
<td>33</td>
<td>7</td>
<td>6</td>
<td>40</td>
<td>9</td>
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<td>Professional services</td>
<td>38</td>
<td>34</td>
<td>36</td>
<td>19</td>
<td>11</td>
<td>15</td>
<td>16</td>
<td>11</td>
</tr>
<tr>
<td>Electric power and natural gas</td>
<td>46</td>
<td>41</td>
<td>15</td>
<td>14</td>
<td>19</td>
<td>14</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>Healthcare systems and services</td>
<td>46</td>
<td>28</td>
<td>17</td>
<td>21</td>
<td>9</td>
<td>19</td>
<td>18</td>
<td>13</td>
</tr>
<tr>
<td>Automotive and assembly</td>
<td>27</td>
<td>39</td>
<td>15</td>
<td>11</td>
<td>49</td>
<td>2</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Travel, transport, and logistics</td>
<td>51</td>
<td>34</td>
<td>32</td>
<td>18</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>3</td>
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<tr>
<td>Retail</td>
<td>23</td>
<td>13</td>
<td>52</td>
<td>38</td>
<td>7</td>
<td>9</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Pharma and medical products</td>
<td>31</td>
<td>31</td>
<td>27</td>
<td>13</td>
<td>25</td>
<td>3</td>
<td>6</td>
<td>4</td>
</tr>
</tbody>
</table>

Source: McKinsey Global Survey
Sectors with more predictable physical activities, greater accessibility to data collection and processing are better suited for automation.

- 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.

**Source:** McKinsey Global Analysis of US Bureau of Labor Statistics
Most jobs are in the **medium risk of automation**.

Opportunities and risks of automation

- 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.

**Proportion of main jobs at risk of automation**


- Increases with AI, Data and Robotics developments

*Source:* Annual Population Survey, UK Survey of Adult Skills (PIAAC) and Frey and Osborne
Jobs at medium risk of automation are administrative, skilled trade, care sector, sales and services

- 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
D2N2 is the 14\textsuperscript{th} largest recipient of Innovate UK funding for projects focused on AI and data.

- 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 LEP**

- 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
- Herfordshire: £6.2M
- Gloucestershire: £5.7M
- Coast to Capital: £5.5M
- Coventry and Warwickshire: £4.7M
- D2N2: £4.0M
- Lancashire: £3.8M

**Grant amount by enterprise type**

- Large
- Academic
- Medium
- Small
- Micro
- Micro/Small

Source: Innovate UK
Grand Challenge: Ageing Society

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

Source: ONS population projections
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.

**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.
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.
Average healthy life expectancy at birth has been declining in D2N2. In 2017 female life expectancy was 4.4 years lower and male was 2.5 years lower than England’s average.
While the life expectancy inequality* is higher for men than women, the latter has been rising.

Source: D2N2 analysis of Public Health Outcomes Framework data
Appendix:

- Changes to version 1.7
- Productivity Correlates
- IMD and UKCI by Local Authority
- Morning peak hour congestion
Additions to the latest version, including changes prompted by the consultation feedback.

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

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. 

Productivity Correlates: Ideas

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

Source: D2N2 analysis of ONS, BRES & data collated by Smart Specialisation Hub
**Skill levels are correlated with productivity performance**

Productivity Correlates: People

- 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.

*Source: D2N2 analysis of ONS, BRES & data collated by Smart Specialisation Hub*
Transport outcomes such as travel times to a work center are linked with productivity performance.

In the scatter plot, it is observed that places with lower travel times tend to be more productive. The data is sourced from D2N2 analysis of ONS, Regional GVA, BRES, DfT.
Broadband availability (or lack thereof) is associated with productivity performance

Places with wider Ultrafast BB availability tend to be more productive.

Places with larger proportion of premises without access to BB tend to be less productive.

Source: D2N2 analysis of ONS, Regional GVA, and Ofcom dataset on Local Authority level fixed broadband.
Business density is associated with productivity performance

**Productivity Correlates:**
Business Environment

**Source:** D2N2 analysis of ONS, Regional GVA, BRES, and ONS & HMRC exports (goods and services) data
Exporting activities are linked to productivity performance

Productivity Correlates: Business Environment

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

Source: D2N2 analysis of ONS, Regional GVA, BRES, and ONS & HMRC exports (goods and services) data
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
IMD and UKCI: Derby

Rural-Urban Classification: Urban with City and Town

Source: Derby is ranked among all local authority districts/boroughs. Source: D2N2 visualisation of 2019 UK Competitiveness Index data, Nottingham Business School; and 2015 Index of Multiple Deprivation, DCLG.
IMD and UKCI: South Derbyshire

Rural-Urban Classification: Urban with Significant Rural

**UKCI**

**IMD**

**Places:** Local Authority Rankings

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

Rural-Urban Classification: Urban with Minor Conurbation

UKCI

Erewash

1. Activity rate (WA)
2. Employment rate (WA)
3. Pay

1. Business density (reg per 10k)
2. GVA per capita
3. Claimant rate

2. Productivity

IMD

Erewash

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

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

Rural-Urban Classification: Urban with Minor Conurbation

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

Rural-Urban Classification: Urban with City and Town

Source: D2N2 visualisation of 2019 UK Competitiveness Index data, Nottingham Business School; and 2015 Index of Multiple Deprivation, DCLG
Rural-Urban Classification: **Urban with Significant Rural**

**IMD and UKCI: Bolsover**

**Derbyshire**

**UKCI**

**Bolsover**

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

- **Median**
- **Rank (higher=better)**

**IMD**

**Bolsover**

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**

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

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

**Places:**
Local Authority Rankings

---

**UKCI**

**Chesterfield**

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

---

**IMD**

**Chesterfield**

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

---

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

Derbyshire
Rural-Urban Classification: Mainly Rural

Places:
Local Authority Rankings

UKCI

IMD

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

Rural-Urban Classification: Largely Rural

Places: Local Authority Rankings

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

Rural-Urban Classification: Urban with Minor Conurbation

Source: Nottingham is ranked among all local authority districts/boroughs. Source: D2N2 visualisation of 2019 UK Competitiveness Index data, Nottingham Business School; and 2015 Index of Multiple Deprivation, DCLG
IMD and UKCI: Rushcliffe
Nottinghamshire

Rural-Urban Classification: Largely Rural

Places: Local Authority Rankings

UKCI

IMD

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

Rural-Urban Classification: Urban with Minor Conurbation

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

Rural-Urban Classification: **Urban with Minor Conurbation**

**Places:** Local Authority Rankings

**UKCI**

- **Gedling**
  - 1. Activity rate (WA)
  - 3. Pay
  - 2. Productivity
  - 4. GVA per capita
  - 2. Employment rate (WA)
  - 3. Claimant rate

**IMD**

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

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

November 2019
IMD and UKCI: Ashfield Nottinghamshire

Rural-Urban Classification: Urban with City and Town

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**

**IMD**

Source: D2N2 visualisation of 2019 UK Competitiveness Index data, Nottingham Business School; and 2015 Index of Multiple Deprivation, DCLG
IMD and UKCI: Newark & Sherwood
Nottinghamshire

Rural-Urban Classification: Largely Rural

Places: Local Authority Rankings

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

Newark and Sherwood

1. Activity rate (WA)
2. Employment rate (WA)
3. Pay
4. Claimant rate
5. Productivity
6. GVA per capita

1. Business density (reg per 10k)
2. High level skills
3. Knowledge-based firm density
4. Start-up rate (per 1k)
5. Barriers
6. Living
7. Income

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

Median • Rank (higher=better)

Median • Score rank (higher=better)
IMD and UKCI: Bassetlaw
Nottinghamshire

Rural-Urban Classification: Largely Rural

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

Typical morning peak hour traffic in Derbyshire

Note: The maps show typical traffic patterns during morning peak hours. Source: Google Maps;
**Infrastructure: Congestion & Travel Times**

**Typical morning peak hour traffic in Nottinghamshire**

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