

# UNDERSTANDING THE GROWTH POTENTIAL OF CREATIVE CLUSTERS

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# Executive summary

## Supporting growth across the UK

The creative industries have grown rapidly over the past decade and are well placed to contribute to the success of the UK in the future. However, it is **important to ensure that this success is shared throughout the country**, not just in London and the South East. There are clusters of creative activity in all the regions of England and in all the devolved nations, but if they are to keep thriving the government may need to help firms overcome barriers that they face.

To design appropriate policies there is a need for greater understanding of how the economic environment and the potential obstacles to growth differ across the UK. This project has developed a framework for comparing this across areas. The framework highlights that firms with access to finance and talent which are innovative, can access export markets and which benefit from a supportive local environment will be particularly well placed to succeed. Creative clusters currently vary in how well they fare on these counts. The data we have collated shows that **all the larger creative clusters have their own relative strengths and weaknesses**. The data suggests:

- There are some areas where access to finance looks to be a particularly limiting factor. These are typically not in London, the East and South East.
- Access to skills is an issue even among the larger, stable clusters. This may also be a particular barrier in the South West and the areas surrounding London.
- Innovation does not vary between clusters as much as other factors.
- Digital infrastructure may be more limiting for creative clusters in coastal areas, while other aspects of physical infrastructure might be most limiting in the South West.
- Export intensity in the creative industries is relatively low in the Midlands and North of England, while the importance of exporting for growth varies across the sub-sectors of the creative industries.

While all creative clusters are different, and what may be most important for the growth of the creative industries in one area may not be the same in another area, this evidence should help the government and industry to do what they can to support creative firms around the UK overcome barriers to success.

## A framework for measuring growth potential

This project developed **a framework for shedding light on the growth potential of the creative industries in different local areas**. The framework was constructed based on economic theory, published cluster-mapping analyses, previous studies of the development potential of the creative industries, consultations with experts and a review of similar frameworks in other contexts.<sup>1</sup> We settled on a five-point framework for benchmarking local growth potential, with the following elements:

### ■ Access to finance

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<sup>1</sup> Bakhshi and Mateos-Garcia (2013), Bakhshi (2016), BIS (2015)

Access to finance is crucial for businesses to succeed, affecting their ability to expand, scale up and invest in R&D and innovation. Previous work has shown that access to finance is a limiting factor for some creative businesses.<sup>2</sup>

#### ■ **Access to talent**

Access to appropriately skilled labour is vital for growth, yet creative firms must compete with other businesses and other parts of the country for talent. Previous work has identified skills gaps in the creative industries and shown that these vary geographically.<sup>3</sup>

#### ■ **Innovation**

Innovation is key to long-run growth. It increases the efficiency with which existing outputs can be produced and gives rise to new goods and services that households and firms value. There is ample evidence that research and development spending in general generates significant private and social returns, and some evidence of positive spillovers from innovation in the creative industries.<sup>4</sup>

#### ■ **Broad environment**

Broader environmental factors in a given location, such as infrastructure and quality of life, can have important direct impacts on productivity. They can also have indirect effects by shaping the ability of the local area to attract and retain a highly skilled workforce. The broader cultural setting is often discussed as being important for the growth of the creative industries, and the industrial composition of the local area can also have major consequences for the quantity and quality of knowledge spillovers experienced by creative firms.

#### ■ **Exporting**

Firms that sell overseas may have greater potential to grow, through access to wider markets and diversification of demand. Previous work has found that export promotion has a positive and significant effect on firm outcomes.<sup>5</sup>

We have collected data from official and public sources on 25 indicators that together constitute a picture of how areas compare on the above five elements. This data is collected, where possible, at the travel-to-work area (TTWA) level. These are areas defined by the Office for National Statistics (ONS) that aim to map local labour markets. This degree of geographical detail (there are 228 TTWAs in the UK) is attractive because it balances the desire to focus on local areas with the need for areas to be large enough to be captured robustly in available datasets.

There are significant challenges in gathering detailed data on the above five elements that are specific to the creative industries. **Obtaining more data that has sufficiently high geographic resolution and sample sizes to permit robust, reliable analysis at local level should be a priority** for the government. This would help ensure that policies aimed at regional levelling up are based on a sound evidence base. This additional data could include new or expanded survey data, making more administrative data publicly available, or scraping public-facing data from private sources.

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<sup>2</sup> Fraser (2011), Di Novo, Fazio, Sapsed and Siepel (2022)

<sup>3</sup> Giles et al (2020), Bakhshi and Spilsbury (2019)

<sup>4</sup> Frontier Economics (2014), Frontier Economics (2016), Bakhshi et al (2008), Bakhshi (2022).

<sup>5</sup> Frontier Economics (2021)

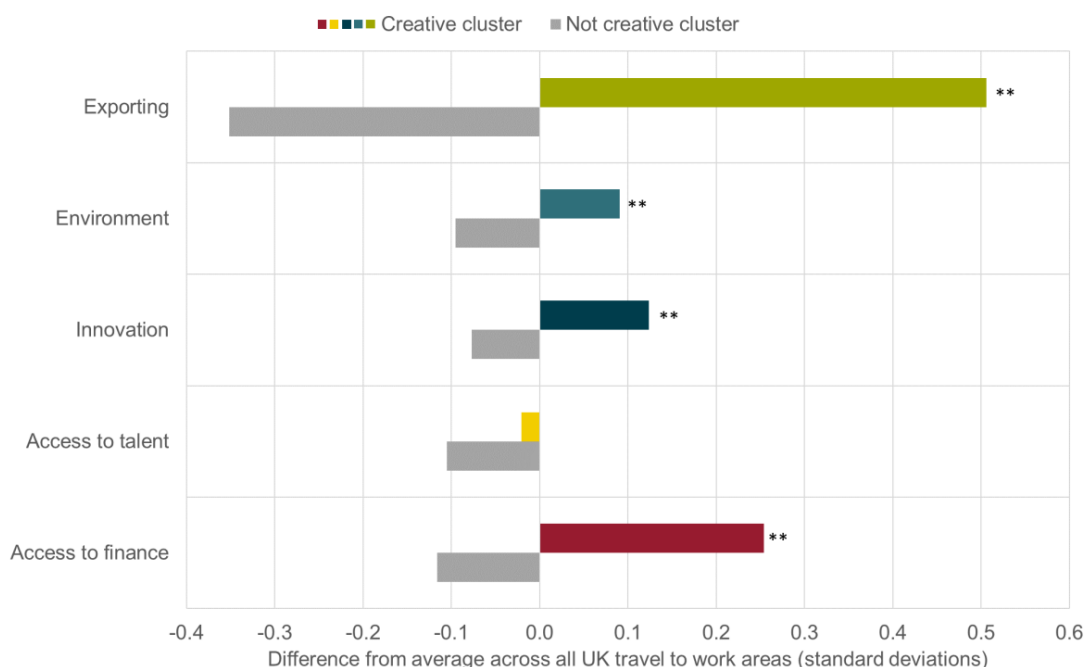
## What makes creative clusters different?

We use the data collated under our framework to examine how creative clusters differ from other areas. We define creative clusters at the TTWA level. While this is known to miss important micro-clusters of creative activity (Chapain et al (2010), Siepel et al (2020)), the clusters we designate capture the majority of creative industry activity in the UK. More fine-grained analysis is limited by data availability.

For the purposes of this analysis, the areas we categorise as creative clusters include: the 47 areas identified as creative clusters by Nesta in its Geography of Creativity report (Mateos-Garcia, and Bakhshi (2016)); areas with a location quotient of creative industry employment or business count above 1 that are also above the 75<sup>th</sup> percentile in terms of the level of creative industry employment; Birmingham, which was defined as a ‘creative challenger’ in Mateos-Garcia et al (2018); and Dundee, where one of UK Research and Innovation’s (UKRI) Creative Industries Clusters Programme investments is located. This definition yields 55 TTWAs identified as creative clusters.

We find (as shown in Figure 1) that creative firms located in **creative clusters on average have better access to finance, are more innovative and are more export-orientated than those in other areas**. They benefit from better digital infrastructure and may draw strength from the industrial composition of the local area, giving rise to industrial synergies and spillovers. However, **creative firms in creative clusters may fare no better in accessing talent than firms elsewhere**. That is because while there is a greater supply of skilled workers, there is also greater demand for those workers.

**Figure 1** Average composite scores for clusters and other areas



Source: Frontier Economics.

Note: Bars indicate the average score for creative clusters and for other TTWAs for each aggregate indicator. Bars for the creative clusters are colour-coded according to the category of the framework. The scores are expressed in terms of a standard deviation difference from the average across all UK TTWAs. A positive value therefore indicates that on average the group of TTWAs in question were better placed than the average across all TTWAs, while a negative value indicates on average being worse placed than the average. \*\* indicates that the difference between the value for the creative clusters and the other areas is statistically different from zero at (at least) the 10% significance level.

This analysis does not *prove* that these factors caused the development of clusters, but it does lend support to the theory that they are important drivers of innovation and growth. Examining how these factors vary across different creative clusters is therefore valuable for the government and other bodies as they seek to remove barriers to growth and support the creative industries across the UK.

Nesta, in partnership with the Creative Industry Council, has conducted a detailed examination of creative clusters, including their evolution and growth.<sup>6</sup> They identified several growth models. Comparing our indicators across these models yields some interesting differences.

- **Incipient clusters** are shown by Nesta to be younger and less stable clusters. They experience high levels of business and employment churn and the lowest creative business survival rates. Our framework data further suggests that they have a particularly **low average score on access to finance and fare less well than other clusters on access to talent**.
- **Creative challengers** are mostly not located in London and the South East and have recently carved out a specialist creative niche. They have diverse ecosystems with some high-growth firms. Our framework data suggests **their relative weaknesses are access to finance and the broader environment**.
- **Creative districts** are shown in Creative Nation to be clusters that have many micro-businesses and stable firms from a wide range of creative sub-sectors, and a smaller share of high-growth businesses. **Creative conurbations** are also relatively stable locations where creative firms have high survival rates. Applying our framework suggests that **creative districts and creative conurbations both appear to have access to talent as their relative weakness**.
- **Creative capitals** are some of the largest creative cities in the UK and score well across the board, particularly on access to talent.

## Looking ahead

The UK's creative industries have considerable potential to continue growing rapidly. The data presented in this report shed light on how obstacles to growth might vary across the country. This evidence should help the government and industry to do what they can to support creative firms around the UK overcome the barriers to success that they face.

All the data collated for our framework is available in an accompanying spreadsheet. This can be added to over time, as updated or improved data becomes available. Future work could build on our analysis to examine particular indicators, clusters, or other areas in more detail, or to examine how the characteristics of different areas evolves over time.

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<sup>6</sup> Mateos-Garcia et al (2018).

## Acknowledgements

We are grateful to the DCMS project team for invaluable day-to-day guidance on the project. We thank members of a wider steering group for their feedback and suggestions. We offer particular thanks to Dr Josh Siepel (Creative Industries Policy and Evidence Centre and University of Sussex) for his assistance with the Creative Radar data and for additional guidance and comments throughout the project.

This report uses statistical data from the ONS. Specifically, data from the Annual Business Survey, the Annual Population Survey, the Employer Skills Survey and the UK Innovation Survey were accessed through the ONS's secure research service. The use of the ONS statistical data in this work does not imply the endorsement of the ONS in relation to the interpretation or analysis of the data. This report uses research datasets which may not exactly reproduce ONS aggregates.

# 1 Introduction

The creative industries are a driver of innovation and growth in the UK. The sub-sectors that for statistical purposes make up the creative industries are IT, software and computer services; Film, TV, video, radio and photography; Advertising and marketing; Publishing; Music, performing and visual arts; Architecture; Design and designer fashion; Museums, galleries and libraries; and Crafts. Together they grew more than twice as fast as the UK economy between 2011 and 2019.<sup>7</sup> Looking to the future, the creative industries continue to have strong potential. They are innovative<sup>8</sup> and relatively export-orientated<sup>9</sup> - two key factors for long-run growth. They are also, given their creative nature, more resistant to automation.<sup>10</sup> As such, they are rich sources of future employment.

It is important that the benefits of this growing sector are felt across the UK. Firms in the creative industries, and creative industry employment, are concentrated in London and the South East<sup>11</sup> but there are significant clusters of activity throughout the country. It would help with regional levelling up if the creative industries receive the support they need to thrive around the UK.

Recent work has used detailed data and analytics to map the location and development of the creative industries. This work has highlighted that the creative industries are concentrated in a small number of places. These clusters can be identified in commuter labour markets<sup>12</sup>, but there are also micro-clusters of activity at the town neighbourhood or even street level.<sup>13</sup> Not all creative clusters are found to grow in the same way.<sup>14</sup> Understanding why some areas develop creative clusters and others do not, and why some are able to grow more successfully than others, is vital for those aiming to shape creative industry policy. Yet this is a challenging task. Growth depends on complex interactions of factors over long periods of time.

In this report we seek to shed some light on this question by developing a framework of indicators that are expected to be relevant for local growth potential. The framework has five elements: access to finance, access to talent, innovation, the broader environment and export activity. By compiling data related to these factors from official and other public sources, we build a picture of the growth potential of different travel-to-work-areas (TTWAs).<sup>15</sup> This can help policymakers in government and other organisations understand the relative strengths and weaknesses of different areas, and therefore where interventions or investment might unlock growth potential in the creative industries.

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<sup>7</sup> Between 2011 and 2019 the gross value added of the creative industries grew by 41%, compared to 16% for the whole UK economy.

<sup>8</sup> Gkypali and Roper (2018)

<sup>9</sup> Di Novo, Fazio and Vermeulen (2020)

<sup>10</sup> Bakhshi, Frey and Osborne (2015)

<sup>11</sup> Tether (2019)

<sup>12</sup> Mateos-Garcia and Bakhshi (2016)

<sup>13</sup> Siepel et al (2020)

<sup>14</sup> Mateos-Garcia, Klinger, and Stathoulopoulos (2018),

<sup>15</sup> Travel-to-work areas are identified by the ONS based on commuting patterns and aim to reflect areas where people both live and work. They are defined such that at least 75% of the resident population work in the area, and of everyone working in the area at least 75% also live in the area.



The framework and the data sources for each of the indicators are described in section 2. In section 3 we take the indicators and compare areas that have developed creative clusters with those that have not, and apply them to clusters that have exhibited different models of growth. We use the findings to highlight the possible barriers to future growth across the set of creative clusters.

All the indicator data is available in an accompanying dataset, so that anyone with an interest in particular indicators, clusters or micro-clusters beyond those we examine can build on our analysis.

## 2 A framework for measuring local growth potential

### Summary

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- We have developed a five-point framework for analysing the local growth potential of the creative industries. This approach is based on economic theory, published cluster-mapping analyses, previous studies of the development potential of the creative industries, interviews with experts and similar frameworks in other contexts (such as those for innovation potential). Our framework consists of five elements:
    - Access to finance
    - Access to talent
    - Innovation
    - Broader environment
    - Exporting
  - We have collected data on 25 indicators, from official and other public sources, that bring these five elements together to form a full picture.
  - There are significant challenges in obtaining detailed data on these factors that is both specific to the creative industries and available at a local level. Collecting more detailed data that is representative of the UK as a whole should be a priority for the government. This would help ensure policies aimed at levelling up are anchored on a sound evidence base.
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### 2.1 Overview

Here we set out our framework for analysing the local growth potential of the creative industries. The framework was constructed based on theoretical considerations, published cluster-mapping studies, previous analyses of the potential of the creative industries, consultation with experts connected to the creative industries about perceived barriers to growth, a review of other related frameworks (such as the one for Mapping Local Comparative Advantage in Innovation, BIS 2015) and data availability.

We settled on a five-point framework for benchmarking local growth potential, with the following elements:

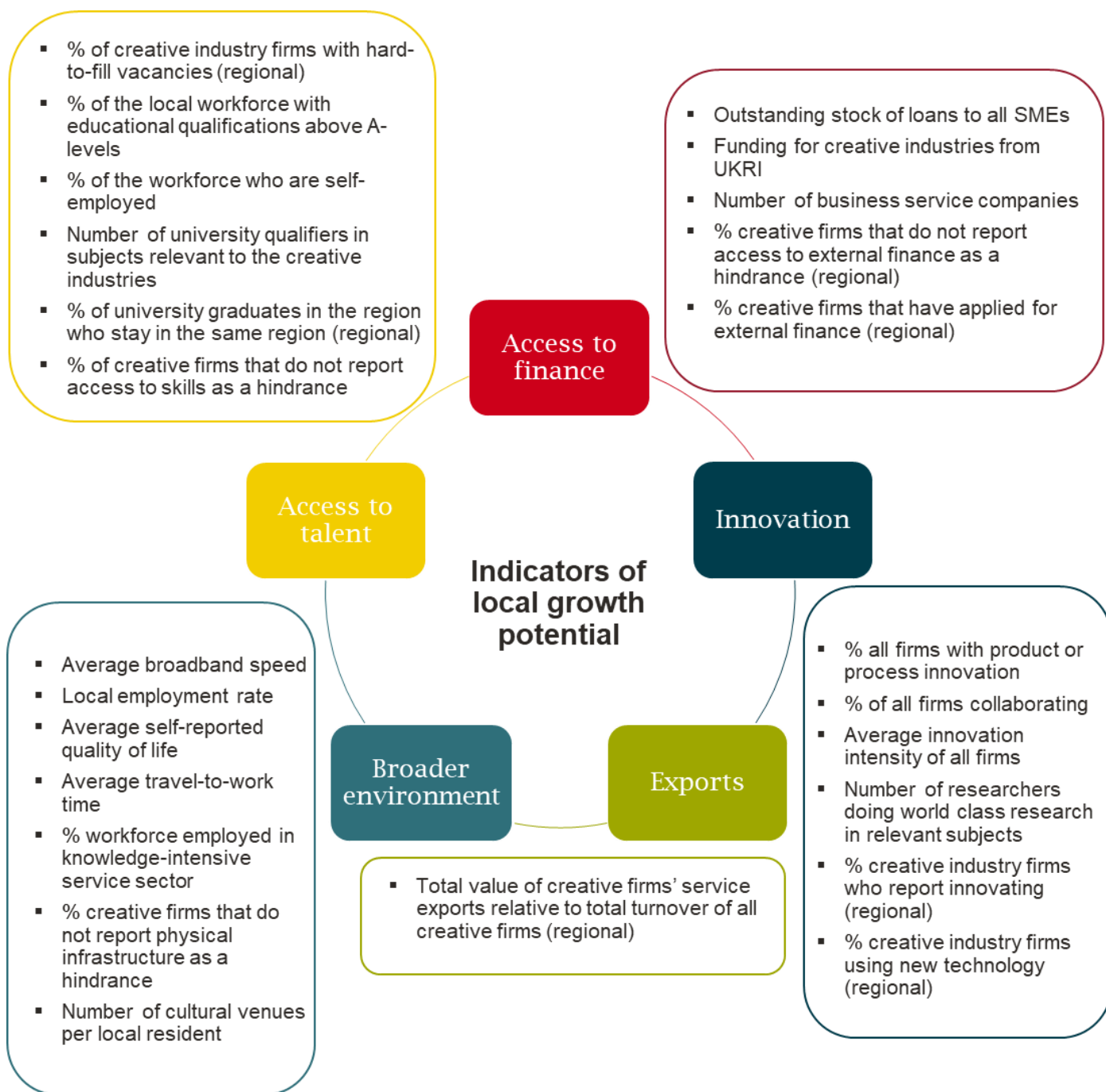
- **Finance.** Access to finance is key for creative businesses to succeed. It affects their ability to expand, scale up and invest in R&D and innovation. External finance is particularly important for SMEs, which make up 95% of the sector.
- **Talent.** Access to skilled labour is vital for growth, yet creative firms must compete with other firms and other parts of the country for talent. The overall supply of appropriately skilled labour in the UK and its geographical distribution are important.

- **Innovation.** Innovation is critical to long-run growth. Innovation increases the efficiency with which existing output can be produced and gives rise to new goods and services that households and firms value.
- **Broader environment.** Broader environmental factors, such as infrastructure and quality of life, can have important direct impacts on productivity; they can also have indirect effects by shaping the ability of the local area to attract and retain a highly skilled workforce. The wider cultural setting may be significant for the creative industries specifically, while the industrial composition of the local area can also have important consequences for the quantity and quality of knowledge that spill over to creative firms.
- **Exports.** Firms that sell overseas have access to larger markets, facilitating growth and, potentially, risk diversification.

There are other factors that likely contribute to the growth of creative firms in a particular area. These include the priority that the local authority or business groups give to the creative industries, networking opportunities and other business support. Unfortunately, as described in section 2.1.2, factors for which we could not obtain robust, consistent data for most local areas could not be included in the framework.

Figure 2 summarises the 25 headline indicators that we selected. Each is described in more detail in section 2.2, which sets out the underlying data sources and discusses the strengths and weaknesses of the indicators.

**Figure 2 Framework overview**



Source: Frontier Economics

## 2.1.1 Geographical level

We collated data on the indicators based on travel-to-work-areas (TTWAs). These are defined by the ONS on the basis of commuting patterns and aim to map areas where people both live and work.<sup>16</sup>

TTWAs are a good measure of geography when considering industrial clusters, not least because they identify local labour markets. This is particularly important for metrics related to talent supply. However, TTWAs vary dramatically in size: London, with a workplace population of over 4 million, constitutes one area; Whitby, with a workplace population of around 10,000, is another. This results in several disadvantages:

- Comparing some indicators across differently sized areas is problematic, so they need to be 'standardised' to make them more comparable. This is described where relevant below.
- The situation of firms and broader environmental factors may vary substantially even *within* a TTWA. This will be a particular issue for larger TTWAs that encompass both urban and rural areas.
- The name of a TTWA can be misleading, as its borders may extend well beyond the town or city in the name. For example, the Manchester TTWA also includes Macclesfield, Altrincham, Stockport, Ashton-under-Lyne, Oldham, Rochdale, Prestwich, Bolton and Bury.<sup>17</sup>

Compiling data at the TTWA level means that the framework lends itself naturally to being used to make comparisons between TTWAs (rather than comparisons of areas defined at other geographical levels) . The implications of this are discussed in more detail in section 3.

## 2.1.2 Data constraints

It is worth highlighting from the outset that data on many of the indicators that one might ideally want is hard to come by in official or publicly available data sources. There are three main reasons for this.

First, data is sometimes available, but it is not possible to home in on the average value for the creative industries specifically. This is the case, for example, with outstanding loans to SMEs. It is possible in the UK Finance data to identify the geographic distribution of loans, but not whether the firms in question are operating in the creative industries.

Second, while many data sources contain both industrial and geographical identifiers, theoretically allowing us to calculate average values for the creative industries in different locations, in practice the sample sizes are often too small to support such analysis. This is the case, for example, with data from the UK Innovation Survey and the Annual Business Survey. With both surveys, we can only examine how the indicator of interest varies for creative firms at the level of English regions and the devolved nations (or, in some cases, how the indicator varies across all firms at the TTWA level). Even for datasets where we can calculate indicators at the TTWA level, small sample sizes sometimes introduce uncertainty.

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<sup>16</sup> More technically, travel-to-work areas are defined such that at least 75% of the resident population work in the area, and of everyone working in the area at least 75% also live in the area (using commuting patterns from the 2011 Census).

<sup>17</sup> A map of TTWAs is available from the ONS Open Geography Portal.

Third, for some important aspects – such as prioritisation of the creative industries by the local authority or business groups, or the availability of networking opportunities and other business support in the local area – consistent data for the whole country is hard to obtain.

We therefore collect data on several complementary indicators for many of the five elements of the framework. This helps to build a picture of the situation facing creative firms in different areas. However, it would be valuable if additional data could be compiled in future that is more directly relevant to some of these elements– in particular, the obtainability and use of different forms of external finance and the availability of workers with the necessary qualifications and skills.

## 2.2 Constituent indicators

Here we elaborate on the indicators collated for our framework and the sources of the data. All the indicators are defined in such a way that a higher value can be interpreted as denoting a more desirable position to be in than a lower value.

### 2.2.1 Indicators of access to finance

Economists have long viewed access to finance as being conducive to growth. External finance allows firms to expand and scale up, and to invest in R&D and innovation in the expectation of future returns. A review of evidence by the What Works Centre for Local Economic Growth found that in 14 out of 17 quality evaluations, access to finance had a positive impact on at least one aspect of firm performance, such as employment or sales.<sup>18</sup> Our discussions with experts close to the creative industries highlighted that the sector regards access to finance as an ongoing problem. Previous research has found that creative sub-sectors (notably Software; Publishing; Video, Film and Photography; and Radio and TV) are more likely to have finance applications rejected than non-creative industry firms with similar risk profiles; that they are more likely to feel discouraged about their access to finance; and that growth as a consequence was weaker than in comparable non-creative businesses.<sup>19</sup> Access to finance is therefore believed to be a limiting factor for the growth of the creative industries. There is anecdotal concern that access to finance varies across the UK, in part because the financial infrastructure varies across the country, and in part because creative firms in some areas – particularly London – are better ‘understood’ and so have easier access to finance than similar firms elsewhere.<sup>20</sup>

Despite its importance, access to finance and external investment in the creative industries is one area where it has proved difficult to find data that enables a comparison across geographical areas. A common problem for both survey data from the ONS and proprietary data from providers is that very large sample sizes are needed to produce results that are representative of creative industry firms from all regions of the UK. In this framework we have therefore made use of several data sources to try to paint a picture of the financial landscape for creative businesses across the country.

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<sup>18</sup> What Works Centre for Local Economic Growth (2016)

<sup>19</sup> Fraser (2011)

<sup>20</sup> ScaleUp Institute (2021)

The indicators of access to finance we collate are:

- **The proportion of creative firms that do not report being hindered by difficulties in accessing external finance**

Data on this is from a bespoke survey conducted as part of the Creative Industries Policy and Evidence Centre's Creative Radar project.<sup>21</sup> The questionnaire explored whether various factors had hindered the organisation in the last 12 months. Responses were on a scale of 1 to 5, where 1 means 'not at all' and 5 means 'hindered significantly'. We count those responding 1 or 2 as not experiencing difficulties in accessing finance. The Creative Radar survey was conducted in early 2020 with responses from 976 creative firms across the UK. It therefore canvassed a larger sample of creative industry firms than other surveys that collect similar information on barriers to success, such as the Longitudinal Small Business Survey. However, the sample size is still limited, meaning it is only possible to examine this indicator at the level of English regions and the devolved nations.

- **The proportion of creative firms that report having applied for external finance**

This is the proportion of firms that have applied for external finance in the last 12 months. Such finance includes new or increased bank overdrafts, loans from financial institutions, peer-to-peer funding, equity finance or other private sector external finance. This data is again from the Creative Radar survey and, owing to the limited sample size, captures only English regions and the devolved nations.

- **The stock of loans to all SMEs in a travel-to-work area**

Data on lending to SMEs (specifically, loans and overdrafts made by UK Finance members) across postcode sectors is made publicly available by UK Finance.<sup>22</sup> We aggregate this data (for 2021 Q2) to approximate lending to SMEs in each TTWA and normalise by the number of SMEs in each area to account for the differing size of TTWAs. It is not possible to focus exclusively on lending to creative businesses, but overall lending to small firms in a local area should shed light on the access to finance those creative businesses might have.

- **The number of business services companies in a travel-to-work area**

To build a picture of the financial environment facing creative businesses we examine data on the number of business services companies in each TTWA in 2021 (normalised by the gross value added

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<sup>21</sup> Siepel et al (2020)

<sup>22</sup> <https://www.ukfinance.org.uk/data-and-research/data/sme-lending-within-uk-postcodes>

of the local area). This is a broad indicator of the size of the financial ecosystem (British Business Bank, 2021).<sup>23</sup> The data was accessed via the ONS's NOMIS portal.<sup>24</sup>

## ■ The amount of funding from UK Research and Innovation

Financing R&D will be key to unlocking potential productivity improvements and boosting growth; investment from UKRI and its research councils has an important role to play in this task. UKRI recently carried out a deep dive into its engagement with the creative industries since 2016, including mapping for the first time the size of its investment.<sup>25</sup> This is a challenging exercise, since it is not always clear which industries will benefit from a particular investment, especially when the investment funds basic research that is carried out outside the commercial sector. The UKRI approach was to develop a Creative Industry Intensity Scale, and weight project funding according to the degree to which it is judged to be relevant to the creative industries. While somewhat subjective, a holistic approach of this type makes it clear that virtually all the UKRI research councils fund research of relevance to the creative industries. We allocated this measure of weighted investment to TTWAs and express it relative to creative industry employment in the local area to take account of different TTWA sizes and the current level of creative industry activity.

In future it would be beneficial to collect more targeted data on the ability of creative firms to access external finance. Some data could be obtained from proprietary providers. For example, Beauhurst tracks the UK's high-growth companies, identifying private firms that have raised equity investment or venture debt, received substantial innovation grants, attended an accelerator, have spun out of a university or have become a visible scale-up. Its data could be used to capture the extent of equity investment or venture capital in private creative industry firms, and how that varies around the UK. Note, however, that sample sizes are likely to be small so only broad geographical comparisons would be possible. Moreover, only a partial picture would emerge for two reasons. First, publicly listed companies are not included. Second, many creative firms tap other sources of external finance, such as bank overdrafts, credit cards and loans, and data on the use of these does not currently exist. Options for obtaining this information include a new bespoke survey of creative firms and negotiating access to data held by the banking and finance industry. UK Finance, for instance, makes publicly available the data on loans to SMEs by postcode that we use here.

### 2.2.2 Indicators of access to talent

Access to an appropriately skilled workforce is vital for any business to thrive. The creative industries are no exception. However, numerous recent reports have identified skill gaps in the creative industries. Giles et al (2020) found that around 6% of creative employers reported difficulty in finding the skills, qualifications

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<sup>23</sup> This measure brings together the total number of businesses operating in the following Business Services-related 3-digit SIC codes- 641 : Monetary intermediation, 642 : Activities of holding companies, 643 : Trusts, funds and similar financial entities, 649 : Other financial service activities, except insurance and pension funding, 651 : Insurance, 652 : Reinsurance, 653 : Pension funding, 661 : Activities auxiliary to financial services, except insurance and pension funding, 662 : Activities auxiliary to insurance and pension funding, 663 : Fund management activities, 691 : Legal activities, 692 : Accounting, bookkeeping and auditing activities; tax consultancy, 702 : Management consultancy activities, 731 : Advertising, 732 : Market research and public opinion polling, 741 : Specialised design activities, 742 : Photographic activities, 743 : Translation and interpretation activities, 749 : Other professional, scientific and technical activities.

<sup>24</sup> <https://www.nomisweb.co.uk/sources/ukbc>

<sup>25</sup> UK Research and Innovation (2021) A Deep Dive into the Creative industries: Mapping UKRI's engagement with the UKs fastest growing knowledge sector.



or experience they needed when trying to fill vacancies (similar to the national average). These shortages add to the workload of existing staff and stifle product and workplace innovation. Bakhshi and Spilsbury (2019) showed that skills issues vary around the country and pointed to the problems likely to arise from a decline in the number of workers from the EU following Brexit. Access to talent may therefore be a limiting factor for growth. Universities are not the only producers of high-quality workers with the appropriate skills and attributes for the creative industries, but they play a vital role. Among graduates, creative graduates are particularly important. Bloom (2021) showed that 46% of graduates in the creative industries have a creative degree (compared to 17% in the graduate population as a whole).

The indicators of access to talent we collate are:

- **The proportion of creative industry firms in the region which do not have hard-to-fill vacancies**

We view the reporting of hard-to-fill vacancies as an indicator of difficulties with the supply of local appropriately skilled labour. Relevant data is collected by the Department for Education's Employer Skills Survey (ESS). The sample sizes in the ESS are only sufficient to enable us to examine how vacancies for skilled jobs vary among creative industry firms at the level of English regions and the devolved nations. This indicator is currently based on data from 2017 and would benefit from being updated when information from the ESS survey conducted in 2022 is available, since both Brexit and the COVID-19 pandemic are likely to have consequences for recruitment in the creative industries.

- **The proportion of the local workforce with educational qualifications above A-levels**

This is a high-level indicator of the educational attainment of the whole local workforce. Data on this for 2019-20 is calculated at the TTWA level from the Annual Population Survey (APS). Owing to limited sample sizes in the APS this indicator is not available for all TTWAs.

- **The number of university qualifiers in subjects relevant to the creative industries**

We used data from the Higher Education Statistics Agency (HESA) to derive the number of higher education qualifiers (including all postgraduate and undergraduate qualifications) in relevant subjects in each TTWA in 2020-21.<sup>26</sup> To take account of the very different sizes of TTWAs, we divide the number of university qualifiers in relevant subjects by the number of people employed in the creative industries in each TTWA.

- **The proportion of university graduates in the region who stay in the same region**

A high output of qualified graduates in the local area will benefit the local economy only if they stay and provide their skilled labour to local employers. HESA publishes high-level statistics on graduate retention, allowing us to use as an indicator the proportion of 2018-19 academic year graduates (across all subject areas) who are employed in the region or devolved nations in which they studied.

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<sup>26</sup> We defined relevant subjects based on the Common Aggregation Hierarchy grouping structure (CAH), drawing on Bloom (2021) and Comunian et al (2011), to include: CAH11 "Computing", CAH13 "Architecture, building and planning", CAH17-01-03 "Marketing", CAH19-01-05 "Creative writing", CAH20 "Historical, philosophical and religious studies", CAH24 "Media, journalism and communications" and CAH25 "Design and creative and performing arts".

This is one area in particular where more disaggregated data would be beneficial, in order to examine the retention of graduates relevant to the creative industries in much finer geographical detail.

#### ■ **The proportion of the local workforce that is self-employed**

The self-employed are often perceived to be entrepreneurial and the creative industries have a higher proportion of self-employed workers than the economy as a whole. Data on the proportion of the local workforce that is self-employed in 2019-20 is calculated at the TTWA level from the Annual Population Survey (APS). Owing to limited sample sizes in the APS this indicator is not available for all TTWAs.

#### ■ **The proportion of creative firms which do not report being hindered by a lack of skills**

Data on this is from the Creative Radar survey. The survey asked whether various factors had hindered the organisation in the last 12 months. Responses were on a scale of 1 to 5, with 1 meaning 'not at all' and 5 meaning 'hindered significantly'. We count those responding 1 or 2 as not being hampered by a lack of skills. The limited sample sizes of the Creative Radar survey mean it is only possible to examine this indicator at the level of English regions and the devolved nations.

There are several areas where further data on the talent available to the creative industries would be useful. One aspect already mentioned is graduate retention rates; data is required that zeroes in on creative graduates and goes into greater geographic detail. It may be possible to negotiate access to such information from HESA. A more complete picture could be derived from the Department for Education's Longitudinal Education Outcomes (LEO) data, which connects the education record of everyone born since 1985 with their employment and earnings data. This could be used to examine creative graduate retention at very local levels.

Richer data would also be beneficial in understanding the skills and experience of those employed in the creative industries, as it would cast light on what aspects of 'talent' creative firms need to tap. If LEO data was expanded to include the industry of employment (which can be matched from administrative data), it would be possible to map younger workers' path from education to creative industry employment. In the absence of such data, further insights could be gained from web-scraping internet data sources such as LinkedIn profiles, which often include education and employment histories. The downside of such an approach, however, is the questionable representativeness of workers who are active on platforms such as LinkedIn.

Finally, more timely and larger sample data on vacancies would be valuable, particularly to understand the potential consequences of leaving the European Union for access to talented labour – an issue highlighted, for example, by Bakhshi and Spilsbury (2019). This data could be obtained from companies such as Burning Glass and Adzuna which web-scrape job vacancies that are posted online. One challenge, however, would be to identify vacancies that are in the creative industries, as this would require some form of sectoral matching based on company name or job advert text.

### **2.2.3 Indicators of innovation**

Innovation is key to productivity improvements and long-run growth. It can create demand for new goods and services or increase the efficiency of existing production. Innovation benefits not just the firm credited

with it; it also benefits other firms that manage to harness the knowledge created. These gains may be concentrated close to home, at least in the short term, as awareness of a new innovation permeates locally before spreading more widely. A review of the evidence suggested that the private returns to R&D spending are of the order of 20-30%; the social returns, factoring in both private returns and spillover benefits, may be around twice as high.<sup>27</sup> A review of evidence by the What Works Centre found that seven out of 16 evaluations of R&D grants, loans or subsidies identified positive effects on productivity, employment or firm financial performance.

Evidence on the returns to innovation in the creative industries specifically is more limited as it is harder to quantify. But the creative industries are without doubt innovative<sup>28</sup> and there is qualitative evidence of positive spillovers<sup>29</sup>. Any differences in innovation around the country could therefore feed through into variations in local growth. As a result, we include indicators of innovation in our framework. But it is worth bearing in mind that other aspects of the framework (in particular, access to finance, access to talent and the broader environment) may also affect the desire or ability of firms in different areas to engage in innovation-generating activities.<sup>30</sup> In other words, differences in innovation may affect local growth, but they may not be the root cause of variations in growth between areas.

The indicators of growth potential we collate are:

- **The proportion of all firms with product or process innovation**

The UK Innovation Survey (UKIS) collects data on whether firms have introduced new or significantly improved goods or services, or new or significantly improved processes for producing or supplying goods or services. We calculate the proportion of firms that meet that criterion at the TTWA level. Owing to the limited sample sizes available in UKIS we pool data for 2014-2018. Note, too, that it is not possible to focus exclusively on creative firms in the TTWA. (For a regional indicator of the proportion of creative firms innovating we draw on the more recent Creative Radar data, see below).

- **The proportion of all firms collaborating on innovation**

Collaboration on research potentially results in wider knowledge dissemination. Co-operation does of course happen with firms or organisations based outside the TTWA (or indeed outside the UK). But when research is undertaken collaboratively it is likely, all else equal, to generate greater local spillover benefits and therefore faster local growth. The UKIS collects data on whether firms have worked on any innovation activities with other businesses or organisations. We calculate the proportion of all firms that have done so at the TTWA level.

- **The average innovation intensity of all firms**

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<sup>27</sup> Frontier Economics (2014)

<sup>28</sup> Gkypali and Roper (2018)

<sup>29</sup> Frontier Economics (2016), Bakhshi (2022)

<sup>30</sup> BIS (2015)

Average innovation intensity is calculated from UKIS data as total spending on innovation activities by firms in the TTWA, divided by the total turnover of firms in the TTWA (including those that did no innovation activities).

#### ■ **The number of world-leading researchers in relevant disciplines**

We calculate the number of full-time equivalent researchers in relevant disciplines who are judged in the Research Excellence Framework 2014 to be world-leading and who are based at universities in the TTWA.<sup>31</sup> The relevant disciplines we include are: Art and design, Architecture, built environment and planning, Computer science and informatics, and Music, drama, dance and performing arts. We class as world-leading those researchers who receive four stars (“Quality that is world-leading in originality, significance and rigour”).

#### ■ **The proportion of creative industry firms engaging in innovation**

The Creative Radar survey also collected data from creative firms about whether they had introduced new or significantly improved products or services, processes or distributional activities, or organisational or management practices. This indicator is specific to the creative industries, but owing to the limited sample sizes of the survey it is available only at the level of English regions and the devolved nations.

#### ■ **The proportion of creative industry firms using new technology**

The Creative Radar survey also asked creative firms whether they had used any of the following new technologies or approaches in the last three years: digital platforms; big data, data mining or data analytics; data-driven or iterative design; machine learning; virtual, augmented or mixed reality; automation or robotics; and 3D printing. Firms are counted as using new technology if they report adopting any of these. This indicator is specific to the creative industries, but owing to the survey’s limited sample sizes it is available only at the level of English regions and the devolved nations.

Current data on innovation spending and activities in the creative industries is beset by small sample sizes, and there would be advantages from collecting new data that would enable an examination of geographical variations in this important area. Frontier Economics (2022) has made the case that gathering such data is also desirable to quantify knowledge spillovers from the creative industries.

## 2.2.4 Indicators of export activity

Firms that sell abroad theoretically have greater potential to grow, through access to bigger markets and diversification of demand. Firms may be less susceptible to a fall in demand during a domestic recession if countries to which they export escape a downturn. In a recent study, Frontier Economics (2021) found that export promotion policies have a positive and significant effect on firm outcomes, including employment, revenue, business survival and productivity. While the benefits of exports to firms in the creative industries

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<sup>31</sup> The REF results are publicly available at [www.ref.ac.uk](http://www.ref.ac.uk)

may diverge from the average of the UK economy as a whole, variations in the export propensity of creative firms in different parts of the country could lead to discrepancies in growth rates in future.

The indicator of export activity we use is:

#### ■ **Creative industry export intensity**

We measure this as the total value of service exports by creative industry firms in a region divided by the total turnover of all creative firms (whether or not they export) in the region. This is calculated using data from the Annual Business Survey (ABS) and assumes that, where a firm has sub-units, that all these sub-units share the same location and sector. The sample sizes in the ABS are such that this indicator is available only at the English region and devolved nations level. This data relates to activity in 2017 because the COVID pandemic has delayed updates. When fresher data is available, it would be valuable to examine how export performance varies geographically after controlling for the sub-sector composition of creative clusters.

Further data on creative firms' export and import activities, and how they has been affected by the UK's departure from the EU, would be useful. Among creative industry firms that responded to the ONS's Small Business Survey in 2020, 31% reported that Brexit was a 'major obstacle to the success of their business', compared to 19% among firms in other industries. Understanding more about the drivers of this and the particular difficulties firms face would likely require bespoke data collection from creative industry firms, as is also the case with plugging data gaps on innovation and finance. HMRC holds administrative statistics on trade in goods, but data on trade in services is derived from surveys that do not have large samples of creative industry firms.

### **2.2.5 Indicators of the broader environment**

Broader environmental factors, such as physical or digital infrastructure and quality of life, can have important impacts on local productivity and the ability to attract and retain a high-skilled workforce. For example, the What Works Centre conducted an evidence review of the effect of broadband on local growth.<sup>32</sup> It found that broadband has a positive economic impact and that skilled workers seem to benefit more than low-skilled or unskilled workers. The Creative Radar project asked creative firms about the factors that had hampered their business.<sup>33</sup> Two in five firms reported that problems with broadband or other digital infrastructure were sometimes a hindrance, while over one in four cited issues with transport or other physical infrastructure. The industrial composition of the local area can also help determine the extent of innovation and demand spill over to creative firms. In other words, areas where there is rapid growth in the businesses that demand goods and services from creative firms, or areas where there are plenty of businesses innovating and producing knowledge that can be used by creative firms, are likely to offer the greatest potential for creative industries to grow.

The indicators of the broader environment that we collate are:

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<sup>32</sup> What Works Centre (2015)

<sup>33</sup> Siepel et al (2020)

## ■ **The local employment rate**

Employment rates are an indicator of local economic wellbeing. Areas with high employment are more likely to be able to attract labour. Equally, areas where businesses in general are thriving are likely to have higher employment rates than others. This means that this indicator should be interpreted with some caution, as it may be both a driver and an outcome of the success of a local area. We calculate the proportion of the working-age population employed in 2019-20 at the TTWA level using the Annual Population Survey (APS).

## ■ **Quality of life**

Local areas will be better able to attract and retain skilled workers if they can boast a good quality of life. We use APS data to calculate a measure of self-reported quality of life. Respondents to the survey are asked to rate their quality of life, on a scale of 1 to 10, on each of four dimensions: anxiety, happiness, satisfaction and worthwhileness. We calculate the average score on all four counts in 2019-20 for each TTWA in Great Britain and for Northern Ireland as a whole.

## ■ **Travel-to-work times**

The ability of businesses to grow will depend on access to high-quality labour, which will in part hinge on transport infrastructure and the availability of affordable housing. This is particularly an issue for areas that are growing rapidly but are surrounded by greenbelt, such as Oxford and Cambridge. We aim to capture the relative accessibility of TTWAs by measuring average travel-to-work times. We use data published by the ONS on average male travel-to-work times (calculated over 2010-2018) for each TTWA in Great Britain.

## ■ **Broadband speed**

Broadband speed is often argued to have a significant impact on firms' ability to increase productivity or to innovate. We use OFCOM data on broadband download speeds in 2019 at the TTWA level for Great Britain and for Northern Ireland as a whole.

## ■ **Size of knowledge-intensive service sector**

Creative industry firms may benefit from demand and innovation spillovers if they are located in areas with a high density of businesses in related industries that they do not directly compete with.

Understanding the interactions between the creative industries and other sectors is an important issue that is the subject of ongoing work. Here we use as an indicator the proportion of the workforce in the TTWA that is employed in the knowledge-intensive service sector (but not in the creative industries) in 2019-20, which we calculate using the APS.<sup>34</sup>

## ■ **% creative industry firms that do not report physical infrastructure to be a barrier**

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<sup>34</sup> See Chapain et. al. (2010), for evidence of co-location between knowledge-intensive services and the creative industries. The knowledge-intensive service sector is defined in line with the ONS's broad industry group to include the High-tech Knowledge Intensive Services (SIC codes 59, 60, 61, 62, 63, 72), Knowledge Intensive Financial Services (SIC codes 64, 65,66) and Knowledge Intensive Market Services (SIC codes 50, 51, 69, 70, 71, 73, 74, 78, 80).

Data on this is from the Creative Radar survey. The survey asked whether various factors had hindered the organisation in the last 12 months. Responses were on a scale of 1 to 5, with 1 denoting 'not at all' and 5 'hindered significantly'. We count those replying 1 or 2 as not being hampered by 'issues with transport links or other physical infrastructure'. The limited sample sizes of the Creative Radar survey mean it is possible to examine this indicator only at the level of English regions and the devolved nations.

#### ■ **Number of cultural venues**

Cultural infrastructure is often discussed as being important both for attracting high-quality workers to an area and for encouraging the growth of creative firms. For a measure of cultural infrastructure, following Bakhshi, Lee and Mateos-Garcia (2013) we use the Culture 24 database of visual arts and heritage venues, and calculate the number of venues in each travel-to-work area. To take account of the different sizes of TTWAs we divide this by the number of residents in the TTWA.

There are many other aspects of the broader environment which may be important for the success of the creative industries in a local area. One is the support they receive from local government or local business groups. Another is the prevalence of networking opportunities or business fairs. It is hard to gather national data on these things, but web-scraping techniques are worth exploring, as understanding the local backing for creative firms should be a priority. The composition of local industry is also likely to be a significant factor. Further work to understand the interactions between creative industry firms and other firms, and the geographical distribution of those other businesses, would be valuable.

## 3 How do creative clusters compare?

### Summary

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- We use the data collated under our framework to examine how creative clusters differ from other parts of the country. We define creative clusters at the TTWA level. While this is known to miss important micro-clusters (Chapain et al (2010), Siepel et al (2020)), the clusters we identify capture the majority of creative industry activity in the UK. Finer-grained analysis is limited by data availability.
  - Creative firms located in creative clusters have on average better access to finance, are more innovative and are more export-orientated than creative firms in other areas. They benefit from better digital infrastructure and may also stand to gain from synergies and spillovers generated by the industrial composition of the local area. However, creative firms in creative clusters may face similar difficulties as firms in other areas when it comes to tapping talent. While there is a greater overall supply of skilled workers in creative clusters, demand for them is also greater and so individual creative firms face more competition.
  - Looking at the typologies of cluster growth identified in Nesta's Creative Nation report:
    - **Incipient clusters**, which have the least stable growth and are often located in the North of England, have a particularly low average score for access to finance, and fare less well than other clusters on access to talent and exporting.
    - **Creative challengers**, which for the most part are not in London and the South East, appear to have access to finance and the broader environment as their relative weaknesses.
    - **Creative districts** and **creative conurbations**, which are generally found in the South, appear to have access to talent as their relative weakness.
    - **Creative capitals** score well across the board, particularly on access to talent.
  - Creative clusters vary in size and make-up, and so the relative importance of barriers to, or enablers of, growth may vary from one cluster to another. However, the extent of the variation in the framework indicators suggests that policymakers may need to help firms in different areas overcome different barriers in order to unlock their full growth potential.
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### 3.1 Defining creative clusters

We use the data collated under our framework to examine how the characteristics of creative clusters differ from those of other areas. In line with the level of geography for which we collate data, we conduct this analysis at the travel-to-work area.



In section 3.2 we compare TTWAs that are designated as creative clusters with other TTWAs. Identifying creative clusters at the TTWA level has the well-known downside that, since TTWAs can be large, important micro-clusters of creative activity might be missed (Chapain et al (2010), Siepel et al (2020)). However, in the absence of framework data at a finer geographical level, it is challenging to conduct similar analysis for more locally defined clusters. The focus on TTWAs that are identified as creative clusters does capture the majority of activity in the creative industries. The 47 TTWAs named by Mateos-Garcia and Bakhshi (2016) as creative clusters account for 75% of creative businesses and 82% of creative industry employment. We focus on 55 TTWAs (including all these 47) that will therefore capture an even greater proportion of activity.

Ideally one would want to compare the local characteristics of high-performing clusters with those of weaker clusters. This is difficult, however, as there is not one simple measure of high performance. Areas may grow rapidly in terms of either business numbers or employment levels, while larger areas may find it hard to match smaller areas for growth even though they are deemed to be no less successful. Nesta, in partnership with the Creative Industry Council, defined five different models of cluster growth following a detailed examination. In section 3.3. we therefore compare the average characteristics of TTWAs based on each of these models.

Finally in section 3.4. we illustrate in maps how our indicators stack up for all the 55 TTWAs that we identify as creative clusters. We also discuss what the findings might say about the barriers to growth for the larger creative clusters in different areas of the UK.

This focus on creative clusters defined at the TTWA level is not to suggest that supporting the growth of micro-clusters or the creative industries in non-cluster areas is not important. Micro-clusters have been shown to have significant growth potential (Siepel et al (2020)). The barriers to, and enablers of, growth in these areas might be different from those in larger clusters, and future analysis to better understand the local characteristics of micro-clusters would be valuable. We have made available the data for the indicators in our framework for all TTWAs in the UK, not just the large creative clusters, so that further analysis can draw on information for the TTWAs in which micro-clusters are located.

## 3.2 Comparing creative clusters to other areas

Figure 3 illustrates the creative clusters and other travel-to-work areas that are included in our comparison. The areas we categorise as creative clusters include:

- The 47 TTWAs identified as creative clusters by Nesta in its Geography of Creativity report.<sup>35</sup> Nesta's methodology grouped creative sub-sectors that are similar to each other and identified TTWAs where one or more of these groups were particularly relatively important in the local economy (in 2011-2014), or where there had been rapid growth in the relative importance of one or more of the groups (between 2007 and 2014). The relative importance could take the form of business counts or employment. TTWAs with lower absolute levels of creative industry activity were excluded.
- TTWAs where the relative importance of the creative industries in the local economy (in terms of jobs or business counts) was above the national average in 2020. This provides a high-level overview of

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<sup>35</sup> Mateos-Garcia and Bakhshi (2016)

areas where the creative industries as a whole are important, using data that is more recent but gathered before the COVID pandemic. As with the Nesta definition, we leave out TTWAs that are not in the top 25% in terms of the *level* of creative industry employment. Doing so excludes smaller areas without a critical mass of creative industry activity where data may be more volatile.

- Birmingham, which does not meet the above criteria but which Nesta identified as a creative challenger cluster in its 2018 Creative Nation report<sup>36</sup>, and Dundee, which is a TTWA with a significant micro-cluster in the gaming industry and one of nine locations to receive significant funding from the UKRI Creative Industries Clusters Programme<sup>37</sup>.

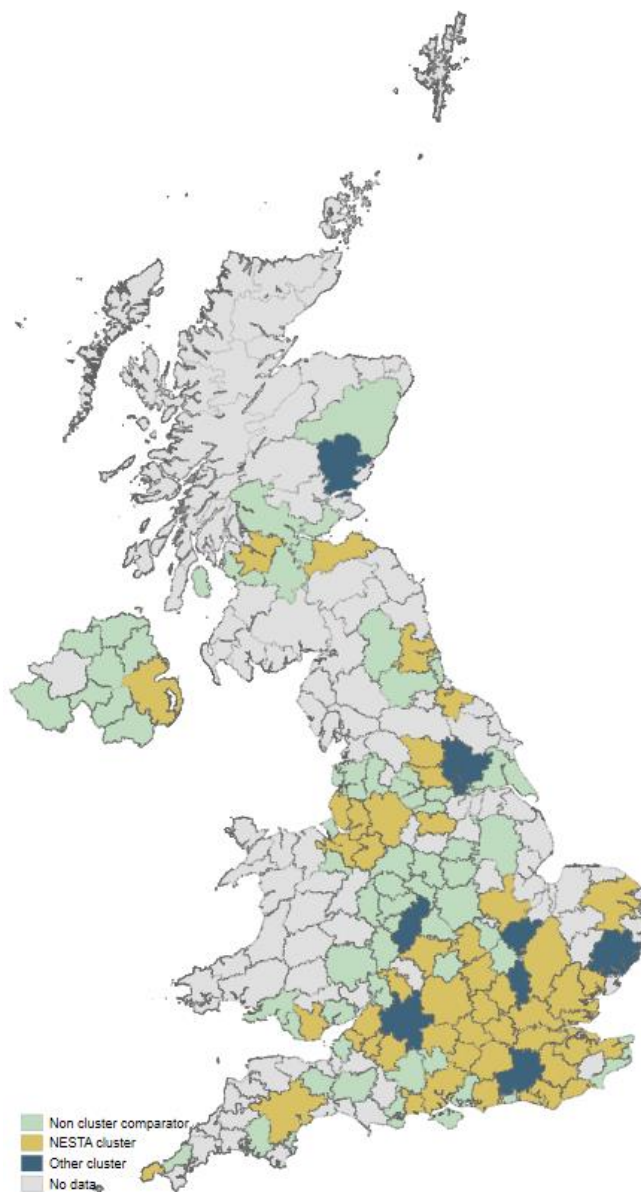
For the non-cluster areas that serve as a comparison with creative clusters, we restrict attention to TTWAs that have more than the median number of jobs in the creative industries. That is because some of our data for smaller areas is missing or is less robust.

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<sup>36</sup> Mateos-Garcia, Klinger and Stathoulopoulos (2018).

<sup>37</sup> <https://www.ukri.org/what-we-offer/our-main-funds/industrial-strategy-challenge-fund/artificial-intelligence-and-data-economy/creative-industries-clusters/>

**Figure 3** Travel-to-work areas defined as creative clusters



Source: Frontier Economics.

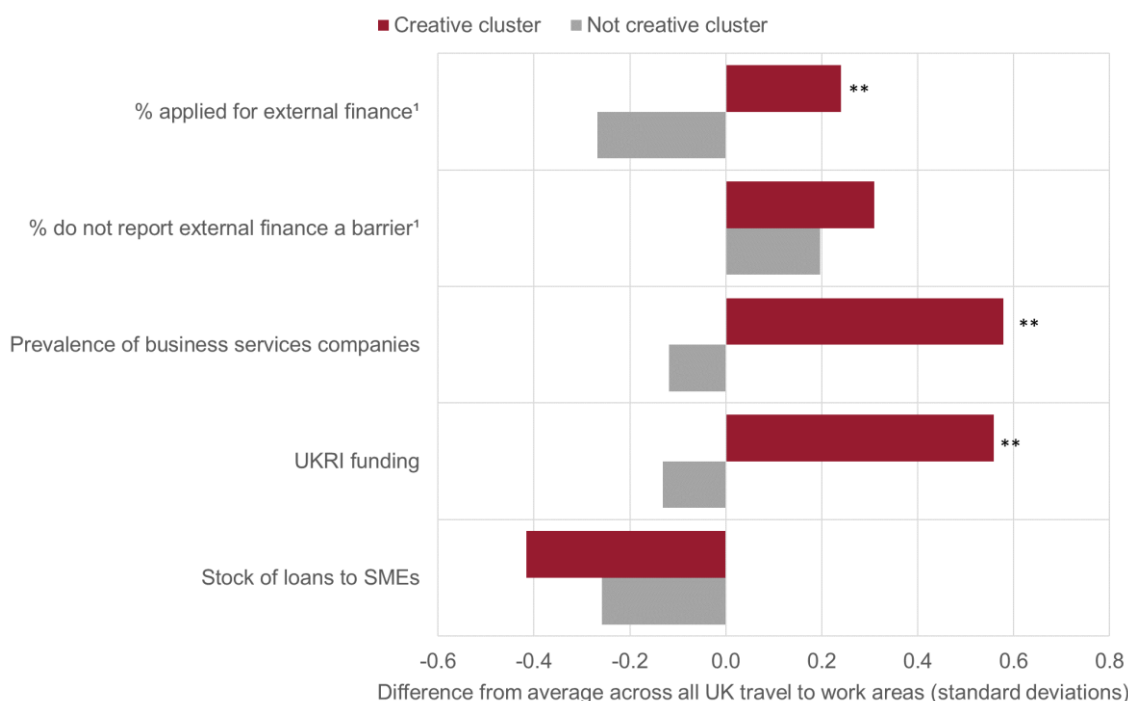
Note: NESTA clusters are those identified in Mateos-Garcia and Bakhshi (2016). Other clusters are Birmingham, Dundee, and TTWAs not identified as clusters by those not identified as clusters in Mateos-Garcia and Bakhshi (2016) but where the relative importance of the creative industries (overall) in the local economy (in terms of employment or business counts) is above the national average in 2020. Together the 'NESTA clusters' and 'other clusters' comprise the set of TTWA we classify as creative clusters in this report.

Figures 4 to 8 show how the creative clusters compare with non-cluster areas on average, for each of the indicators in our framework. To aid comparison, all the indicators have been standardised and are expressed in terms of standard deviation differences from the average across all TTWAs in the UK, including London. A positive number therefore indicates that the average across the areas in question (either clusters or non-clusters) is greater than the average across all TTWAs in the UK. Conversely, a negative number indicates that the average across the areas in question is lower than the average across all TTWAs.

■ **Access to finance (Figure 4):**

The creative clusters in general score above the UK average when it comes to indicators of access to finance. For example, it is not surprising that UKRI investment is greater in the creative clusters given the particularly large sums being invested in a small number of locations as part of the Creative Industries Clusters Programme.<sup>38</sup> However, it is also the case that creative clusters typically sit in regions where creative firms more often report applying for external finance and less often report that problems accessing finance are a hindrance (though this latter difference is not statistically significant). The financial ecosystem, as proxied by the number of business services firms, is more developed in creative clusters than in other areas. The only indicator that does not correlate in the expected direction is the stock of outstanding lending to SMEs; the average in creative clusters is lower than the average in other areas.

**Figure 4 Average indicator scores for clusters and other areas: access to finance**



Source: Frontier Economics

Note: <sup>1</sup> indicates that the indicator is only available at the regional level. Bars indicate the average score for creative clusters and for other TTWAs for each indicator. The scores are expressed in terms of a standard deviation difference from the average across all UK TTWAs. A positive value therefore indicates that on average the group of TTWAs in question were better placed than the average across all TTWAs, while a negative value indicates on average being worse placed than the average. \*\* indicates that the difference between the value for the creative clusters and the other areas is statistically different from zero at (at least) the 10% significance level.

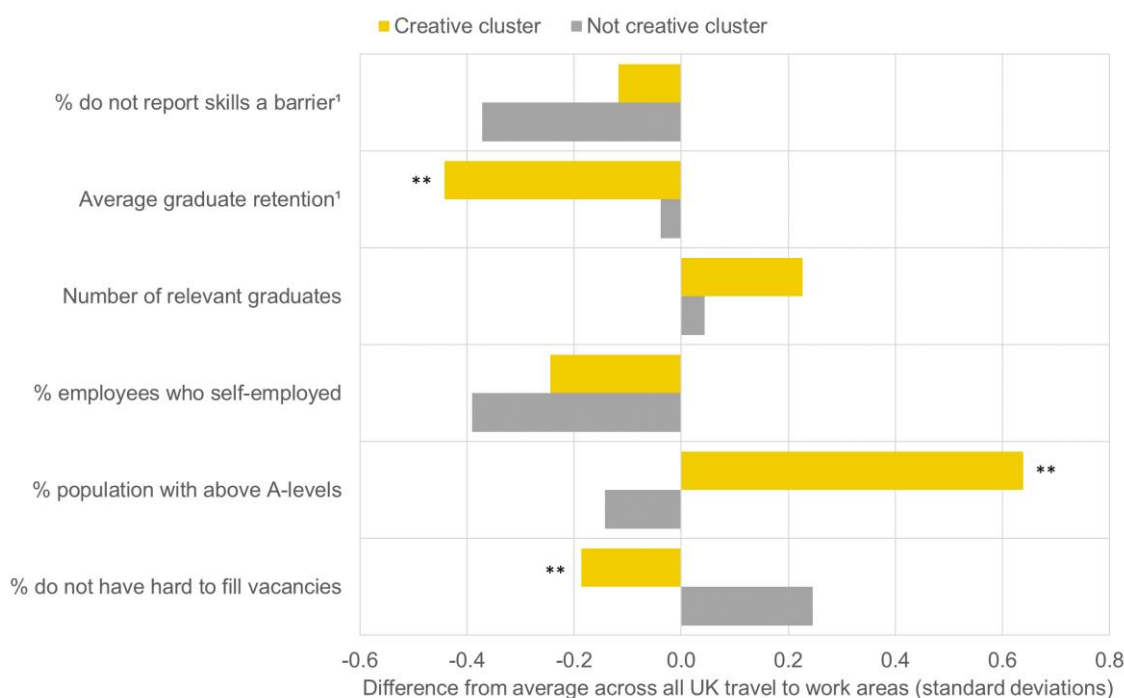
■ **Access to talent (Figure 5):**

The picture for access to talent is somewhat more mixed. People on average are more educated in creative clusters, with a greater share of the population having above A-level qualifications. There is also a greater

<sup>38</sup> The Creative Industries Clusters Programme is funded by the Industrial Strategy Challenge Fund and comprises nine research and development partnerships based around clusters: Bristol and Bath Creative Research and Development; Business of Fashion, Textiles and Technology (Stratford, Thames Gateway, Lea Valley), Clwstwr (Wales), Creative Informatics (Edinburgh), Future Fashion Factory (Leeds and nationwide), Future Screens Northern Ireland, InGAME (Dundee), StoryFutures (London and Home Counties) and XR Stories (York and Humber).

supply of relevant graduates, although the difference is not statistically significant. But creative clusters on average are in regions with lower average graduate retention. This is largely because many creative clusters are located in the South East and East of England, which have low rates of graduate retention because many graduates move to London. Building a more detailed picture of local retention of graduates in subjects most relevant to the creative industries is an important priority. The proportion of creative industry firms for which lack of skills is not a hindrance is below the average across all UK TTWAs, but it is greater than the average of non-creative cluster areas that serve as a comparator. In contrast, the share of creative industry firms that do not report hard-to-fill vacancies is on average lower in the creative clusters than in other areas, implying that more firms *do* have hard-to-fill positions. This could be because the creative clusters have access to a greater supply of talent but are also faced with higher demand for that talent.

**Figure 5 Average indicator scores for clusters and other areas: access to talent**



Source: Frontier Economics.

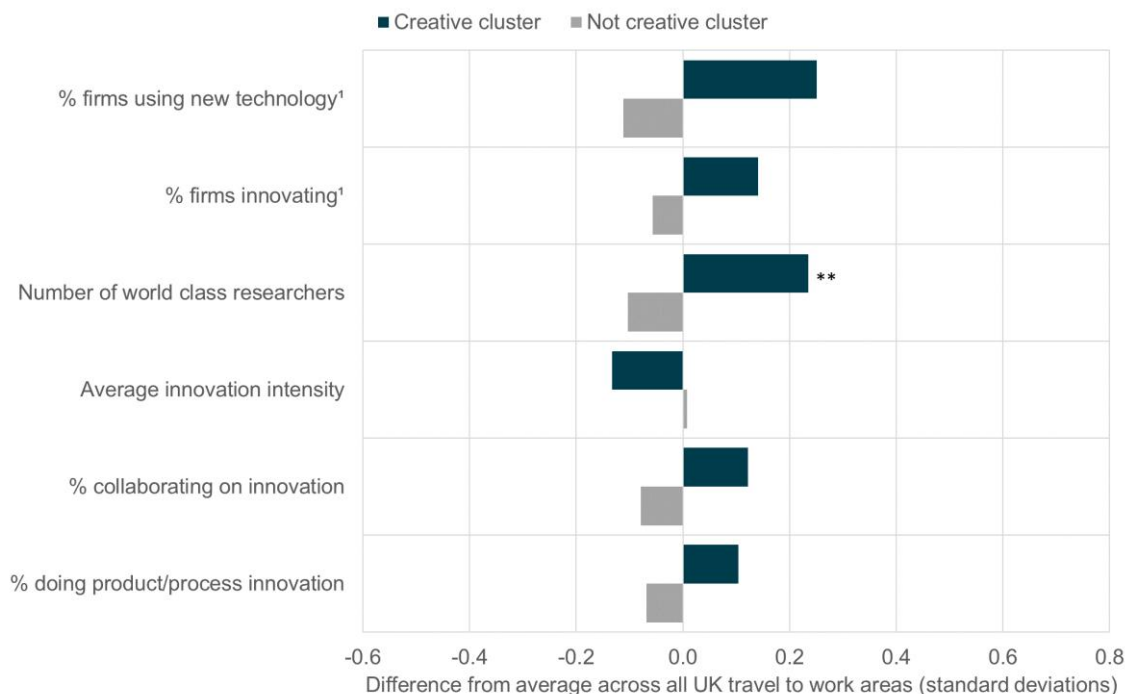
Note: <sup>1</sup> indicates that the indicator is only available at the regional level. Bars indicate the average score for creative clusters and for other TTWAs for each indicator. The scores are expressed in terms of a standard deviation difference from the average across all UK TTWAs. A positive value therefore indicates that on average the group of TTWAs in question were better placed than the average across all TTWAs, while a negative value indicates on average being worse placed than the average. \*\* indicates that the difference between the value for the creative clusters and the other areas is statistically different from zero at (at least) the 10% significance level.

■ **Innovation (Figure 6):**

The indicators for innovation mainly suggest that firms in the creative clusters are likely to be more actively engaged in innovation than businesses in other areas. Firms in general (rather than creative industry firms specifically) are more likely to be engaged in product or process innovation, and to be collaborating on innovation, in areas that are creative clusters compared with other areas. Creative clusters are also more likely than other areas to be located in regions where creative industry firms are more likely to be innovating and using new technology. Finally, on average the creative clusters have more world class researchers in disciplines relevant to the creative industries, even relative to the size of local creative employment, than other areas. These differences in innovation indicators between clusters and other areas are, however,

smaller than the differences for most other elements of the framework. It is only in the number of world class researchers that the creative clusters are statistically different from other non-cluster areas.

**Figure 6 Average indicator scores for clusters and other areas: innovation**



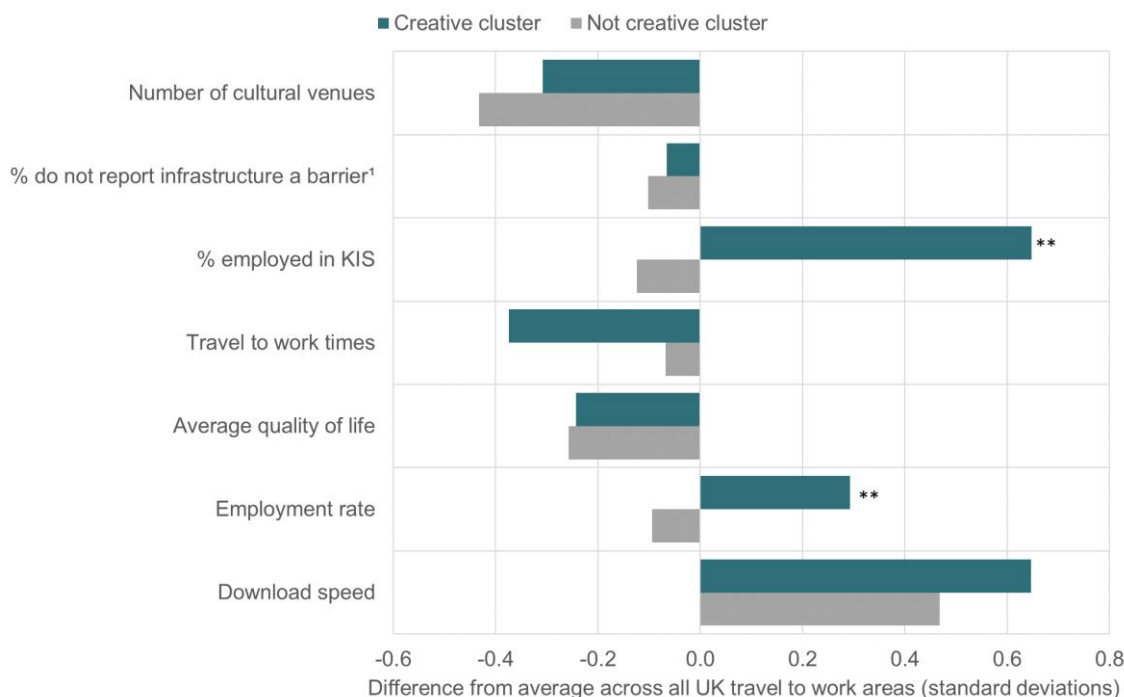
Source: Frontier Economics.

Note: <sup>1</sup> indicates that the indicator is only available at the regional level. Bars indicate the average score for creative clusters and for other TTWAs for each indicator. The scores are expressed in terms of a standard deviation difference from the average across all UK TTWAs. A positive value therefore indicates that on average the group of TTWAs in question were better placed than the average across all TTWAs, while a negative value indicates on average being worse placed than the average. \*\* indicates that the difference between the value for the creative clusters and the other areas is statistically different from zero at (at least) the 10% significance level.

■ **Broader environment (Figure 7):**

The creative clusters on average have better internet access than the UK average, higher local employment rates and a bigger share of the local workforce employed in knowledge-intensive services. The indicators for physical infrastructure are less favourable. Travel-to-work times are longer in the creative clusters; the number of cultural venues per resident is lower than the UK average (though slightly higher than the set of non-cluster areas we explicitly compare to in Figure 2); and the creative clusters differ little from other areas in terms of the proportion of creative firms that say poor transport links or other physical infrastructure have been a hindrance.

**Figure 7 Average indicator scores for clusters and other areas: broader environment**



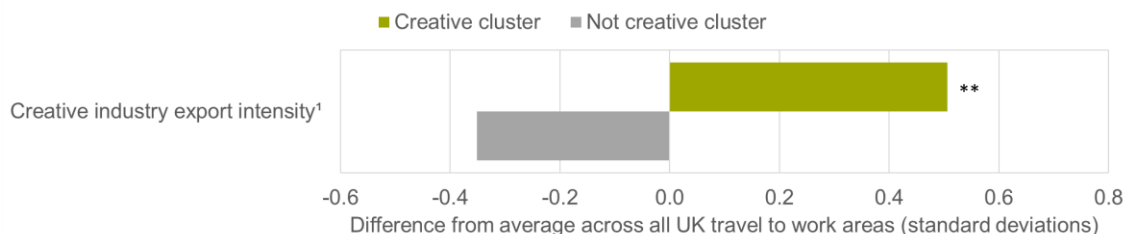
Source: Frontier Economics.

Note: <sup>1</sup> indicates that the indicator is only available at the regional level. Bars indicate the average score for creative clusters and for other TTWAs for each indicator. The scores are expressed in terms of a standard deviation difference from the average across all UK TTWAs. A positive value therefore indicates that on average the group of TTWAs in question were better placed than the average across all TTWAs, while a negative value indicates on average being worse placed than the average. \*\* indicates that the difference between the value for the creative clusters and the other areas is statistically different from zero at (at least) the 10% significance level.

**■ Exports (Figure 8):**

The creative clusters are on average located in regions where the export intensity of the creative industries (measured as the total service exports of creative firms divided by the total turnover of all creative firms (whether or not they export)) is higher than in non-cluster areas.

**Figure 8 Average indicator scores for clusters and other areas: exports**



Source: Frontier Economics.

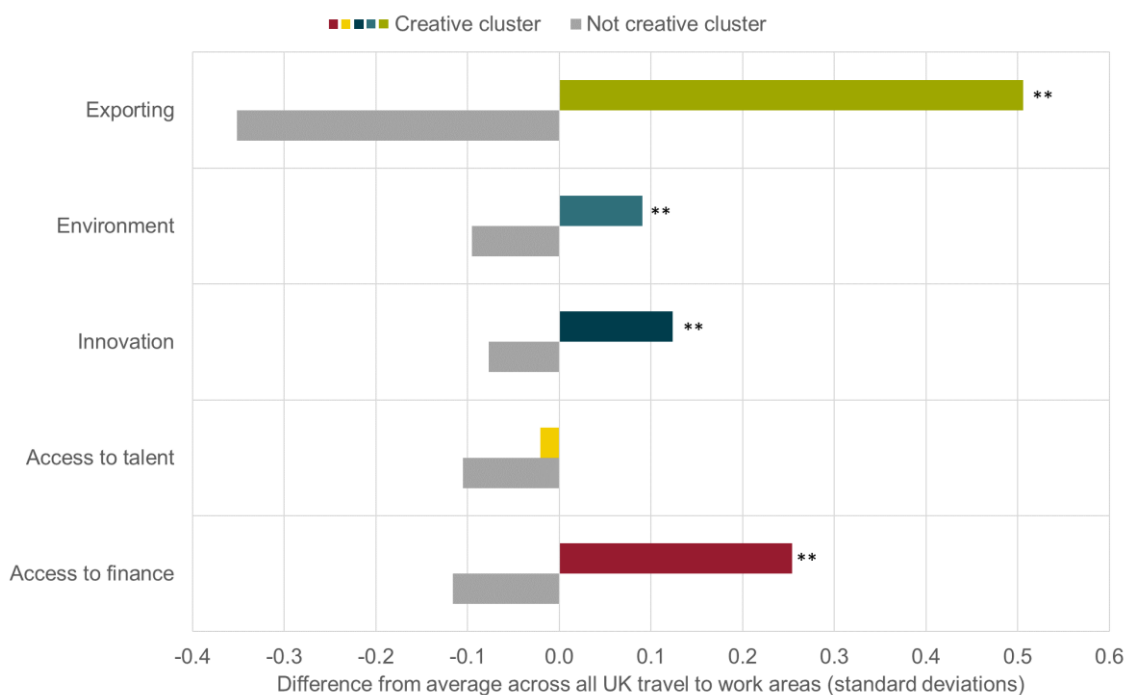
Note: <sup>1</sup> indicates that the indicator is only available at the regional level. Bars indicate the average score for creative clusters and for other TTWAs for each indicator. The scores are expressed in terms of a standard deviation difference from the average across all UK TTWAs. A positive value therefore indicates that on average the group of TTWAs in question were better placed than the average across all TTWAs, while a negative value indicates on average being worse placed than the average. \*\* indicates that the difference between the value for the creative clusters and the other areas is statistically different from zero at (at least) the 10% significance level.

To summarise this comparison between creative clusters and other areas, we calculate a composite indicator for each of our five chosen elements: finance, talent, innovation, environment and exports. This is calculated as a simple unweighted average of the constituent indicators for each element.<sup>39</sup> A comparison of these composite indicators between the creative clusters and other TTWAs is shown in Figure 9.

Creative firms located in creative clusters on average have better access to external finance, they are more innovative and on average they are more export-intensive. They also on average benefit from better digital infrastructure and enjoy potential synergies from being situated in areas with a high proportion of jobs in knowledge-intensive services. Access to talent is perhaps their main handicap. There is a greater supply of talented labour in these areas, but it may not keep pace with the high demand for skilled workers from creative firms in these clusters.

Our findings of course do not prove that finance, talent, innovation, the broad environment and exporting are the reasons why creative clusters have sprung up. Cluster development is a long and complex process that depends on many factors and how they interact over time. However, the findings suggest that these are important elements for the government to focus on as it seeks to support future growth in the creative industries across the UK.

**Figure 9 Average composite scores for clusters and other areas**



Source: Frontier Economics.

Note: Bars for the creative clusters are colour-coded according to the category of the framework. Bars indicate the average score for creative clusters and for other TTWAs for each indicator. The scores are expressed in terms of a standard deviation difference from the average across all UK TTWAs. A positive value therefore indicates that on average the group of TTWAs in question were better placed than the average across all TTWAs, while a negative value indicates on average being worse placed than the average. \*\* indicates that the difference between the value for the creative clusters and the other areas is statistically different from zero at (at least) the 10% significance level.

<sup>39</sup> Theoretically one might want to weight the indicators in each category, giving more weight to those that are felt to be more important or more relevant to the growth of the creative industries. However, doing so requires quantifying how relevant/important each indicator is, and we do not have a sufficient evidence base for that. We therefore use an unweighted average of the indicators.



### 3.3 Comparing types of creative clusters

What is important for the development of a creative cluster may be different from what matters for the continued growth and success of the creative industries in that area. However, comparing the indicators in our framework between more and less successful clusters is fraught with the difficulty of defining which clusters should be labelled as more or less successful. Clusters are all very different. They vary in size and composition. Some are hotspots for all creative industries, while others are host to agglomerations of particular sub-sectors. Some feature an above average concentration of creative industry businesses; others, of creative industry employment.

Nesta, in partnership with the Creative Industry Council, has made a detailed examination of creative clusters, including their evolution and growth.<sup>40</sup> They identified several models:

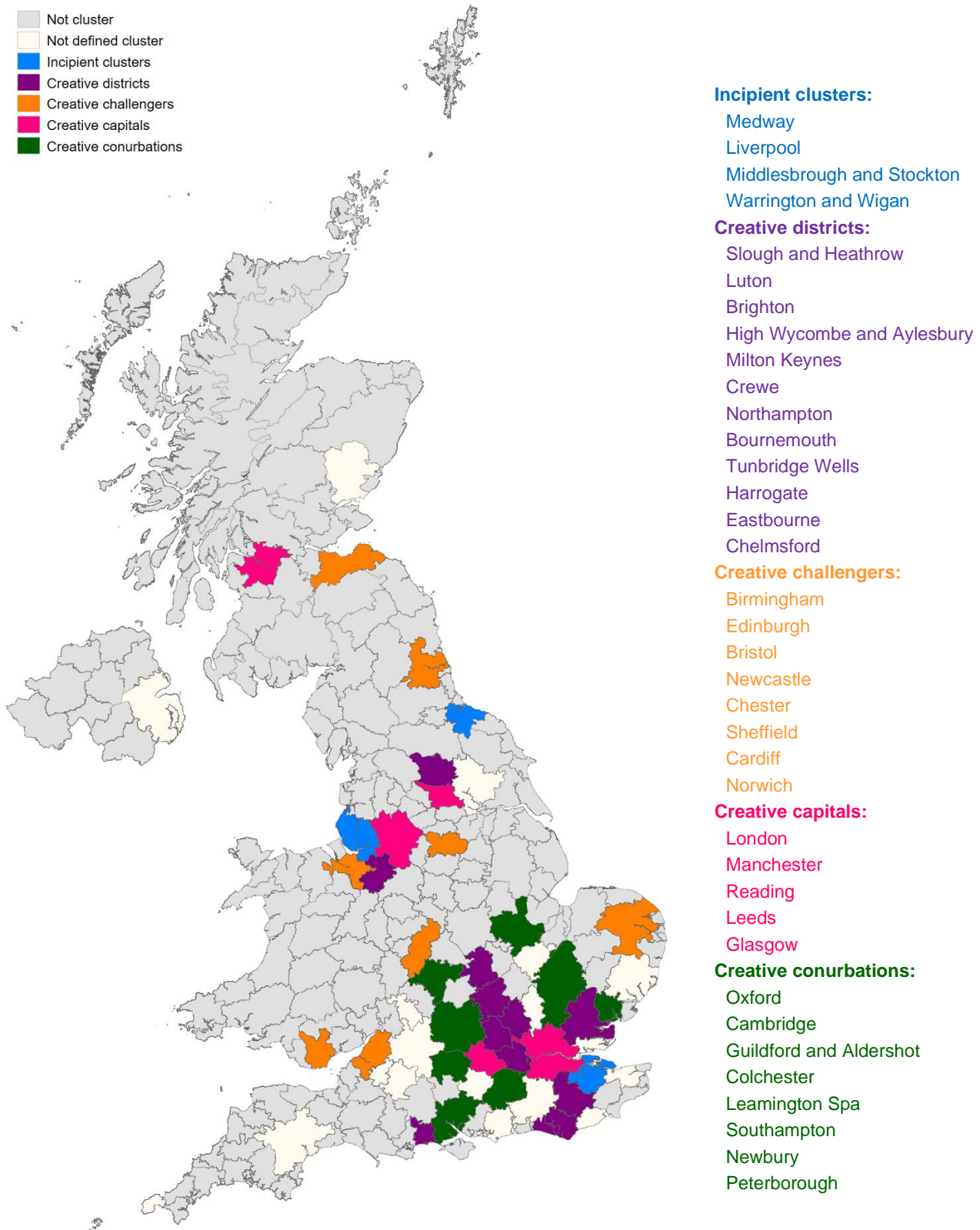
- **Incipient clusters:** younger and less stable clusters, they experience high levels of business and employment churn and the lowest creative business survival rates.
- **Creative districts:** these have many micro-businesses and stable firms from a wide range of creative sectors, and a smaller share of high-growth businesses.
- **Creative conurbations:** relatively stable locations where creative firms have high survival rates. High-growth firms play a stronger role in job creation than in other clusters and churn rates are generally low.
- **Creative capitals:** where large and medium-sized creative businesses are more prominent and there is a bigger share of high-growth firms.
- **Creative challengers:** these locations have recently developed a creative specialisation and have diverse ecosystems with the presence of some high-growth firms.

Figure 10 illustrates the clusters that were identified as matching each of these models. Incipient clusters are typically found in the North, while creative districts and creative conurbations are typically found in the South. Creative capitals include larger cities (London, Manchester, Reading, Leeds and Glasgow), while creative challengers include a set of large cities that for the most part are not in London and the South East.

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<sup>40</sup> Mateos-Garcia et al (2018)

**Figure 10 A typology of creative clusters**

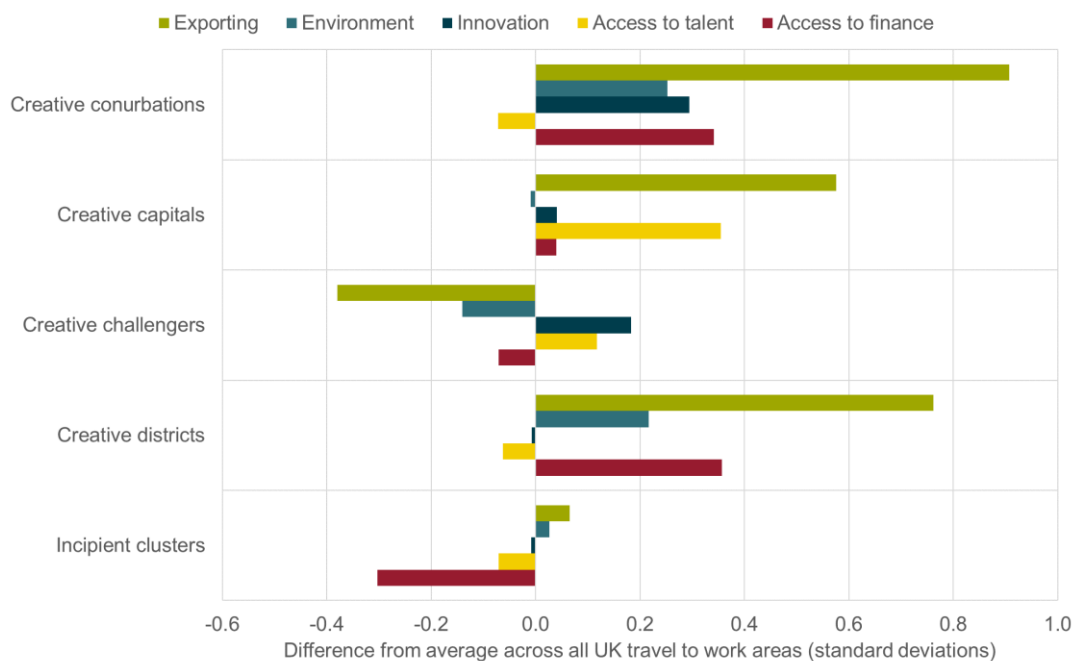


Source: Frontier Economics and Mateos-Garcia et al (2018).  
 Note: Not all our clusters are allocated to a cluster growth model by Nesta (2018).

Figure 11 compares the average composite indicator scores of the different cluster models. There are some striking differences.

- Incipient clusters have a particularly low score on access to finance, and fare less well than some other cluster types on access to talent. This could indicate that these are indeed barriers inhibiting more stable growth of creative businesses in these areas.
- Creative districts score well on most counts, the main exception being access to talent. The proportion of firms reporting that access to skills is a hindrance and that vacancies are hard to fill is higher in creative districts than the UK average. Average graduate retention is also lower on average than in other creative clusters.
- Creative challengers score higher than the UK average on innovation and access to talent. For these areas, most of which are not in London and the South East, it is access to finance, exporting and the broader environment that appear to be weaknesses. In particular, travel-to-work times are longer in these areas, and there is a smaller share of jobs in knowledge-intensive service industries that might generate spillover benefits.
- Perhaps unsurprisingly, creative capitals score well across the board, particularly on access to talent.
- Creative conurbations also look well placed almost across the board, the exception being access to talent. These areas on average have highly educated populations but may find it hard to retain graduates. Also, firms in these areas report hard-to-fill vacancies more often than the average.

**Figure 11** Average composite scores for clusters in different cluster types



Source: Frontier Economics

Note: Clusters allocated to different growth typologies are set out in Figure 5. Bars indicate the average score for each aggregate indicator. The scores are expressed in terms of a standard deviation difference from the average across all UK TTWAs. A positive value therefore indicates that on average the group of TTWAs in question were better placed than the average across all TTWAs, while a negative value indicates on average being worse placed than the average.

### 3.4 What are the barriers facing current clusters?

The comparison of composite indicator scores reveals important differences in how clusters are positioned to realise their growth potential. We drill into this more in Figure 12, where we illustrate how the score on each of the five composite indices varies across all the creative clusters. The equivalent maps for each of the individual indicators are provided in the annex.

It is clear that all areas have their own relative strengths and weaknesses. No clusters have low scores across the board, and few score consistently highly either. Of course, we should not forget that all the creative clusters are by definition relatively successful. They are also all very different, so what may be the most important factor for the continued growth of the creative industries in one area may not be the same in another area. That said, the framework data does suggest that some areas face particular barriers that merit further investigation.

For example, access to finance looks to be a particularly limiting factor in some areas, notably Middlesbrough and Stockton according to the composite indicator, but also Newcastle, Cardiff, Warrington and Wigan and Chester. Perhaps the most revealing indicator in this regard is the proportion of businesses reporting that access to finance is a hindrance. This is higher on average among firms in the South West.

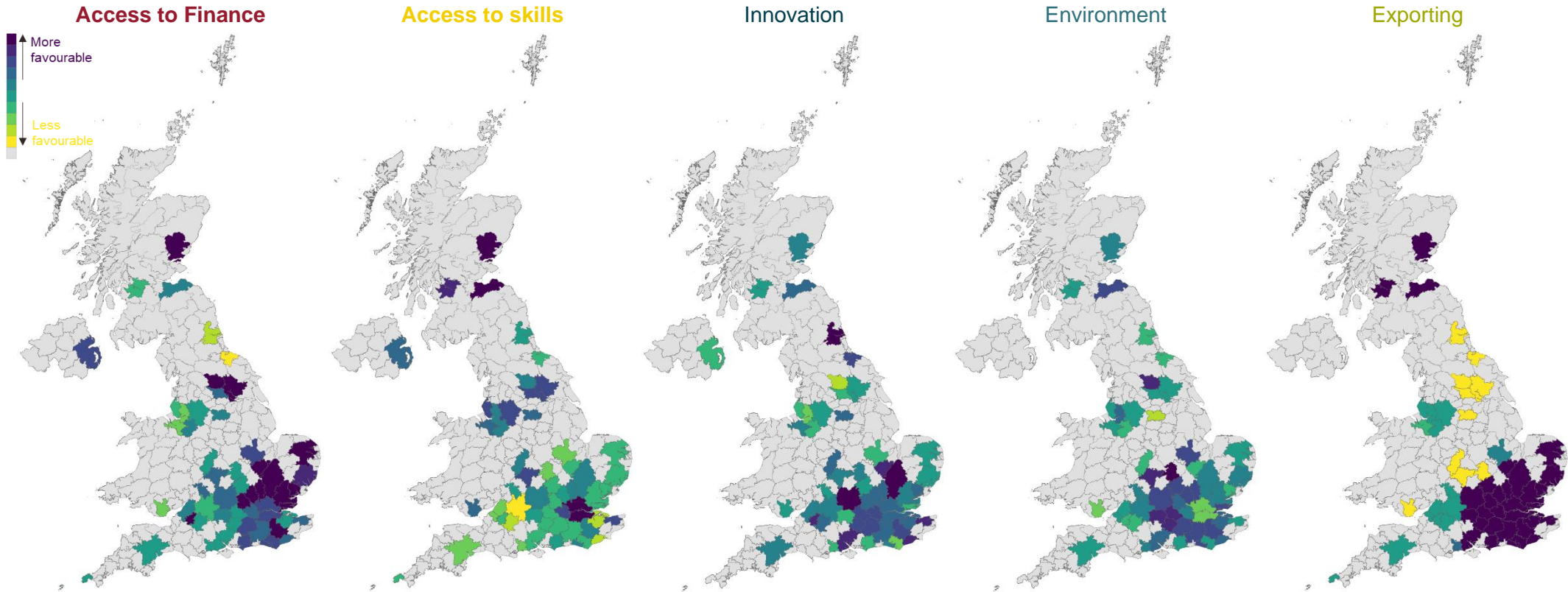
Access to skills has been shown to be an issue even in the larger, relatively stable creative clusters. Figure 12 suggests that access to skills may be a particular issue in Swindon, which has fewer graduates with the relevant qualifications; the South West in general stands out for reporting hard-to-fill vacancies. Access to talent also seems to be a relative weakness in Trowbridge, Medway and Hastings.

There is less variation between creative clusters when it comes to innovation. The clusters where innovation appears least strong is Harrogate, where university research capacity is weaker, and across Yorkshire, where on average creative industry firms are less likely to report innovating than elsewhere in the UK.

The indicators of the broad environment that are contained in the framework cover a diverse set of local characteristics. Different aspects stand to be more or less important for some areas than others, depending on the sectoral composition of the creative cluster. For example, the size of the local knowledge-intensive service industry might be important for the growth of clusters where IT, software and computer services are concentrated because of potential knowledge spillovers, but it might matter less for clusters dominated by music and performing arts. The framework data suggests that digital infrastructure may be more limiting for creative clusters on the south coast and in Crewe, while other aspects of physical infrastructure might be most limiting in the South West.

It is the North East, Yorkshire, Wales and the Midlands that export intensity in the creative industries is relatively low. However, the importance of exporting for growth will vary from one sub-sector to another, so a more thorough geographical and sectoral breakdown of the data would be beneficial.

Figure 12 Composite indicators



Source: Frontier Economics

Note: The indicator scores are in terms of the difference from the average across all UK TTWAs expressed in standard deviations. More yellow indicates scoring less favourably while bluer indicates faring more favourably. These five maps use the same scale for colour shading TTWAs to allow comparison (across the indicators) in the extent of variation across the country for each indicator. The middle eight bands are equally sized, covering 0.15 of a standard deviation. The bottom band captures areas where the indicator is more than 0.6 standard deviations below the average across all UK TTWAs. The top band captures areas where the indicator is more than 0.6 standard deviations above the average across all UK TTWAs.

## 4 Conclusions

There is little doubt that the creative industries have considerable potential to continue to grow rapidly. But if that potential is realised, will it be across the whole of the UK? The starting point is strong, with creative clusters spread throughout the regions of England and in all the devolved nations. But understanding the barriers to growth that creative firms face in different parts of the country, and how policy might help overcome them, will be important.

The framework of indicators developed in this report is another step in getting to grips with these obstacles. Firms that can tap finance and talent, that are innovative, that can access export markets and that benefit from a supportive local environment will be particularly well placed to succeed. Where data is available, we have shown that large creative clusters appear to differ in how well they fare on each of these counts. For example, access to finance looks to be a particularly limiting factor outside of London, the East and South East, while access to talent and digital infrastructure are significant issues in the South West. Government and industry should do what they can to help creative firms overcome the barriers they face, bearing in mind that the support most needed will vary around the UK.

An important qualification is that the data collated for our framework has limitations. Looking ahead, the compilation of more detailed data about the creative industries is crucial if policies are to continue to be built on a high-quality evidence base. This could include new or expanded survey data, designed for example to elicit large-sample information on firms' access to finance or innovation activities; making more use of administrative data, for example to understand the local retention of creative graduates; or greater use of data compiled from tapping private data sources, related for example to posted job vacancies or local government support for creative firms. It would be particularly valuable if new data could be harnessed to examine the barriers to growth of micro-clusters as well as the larger clusters we examine here.

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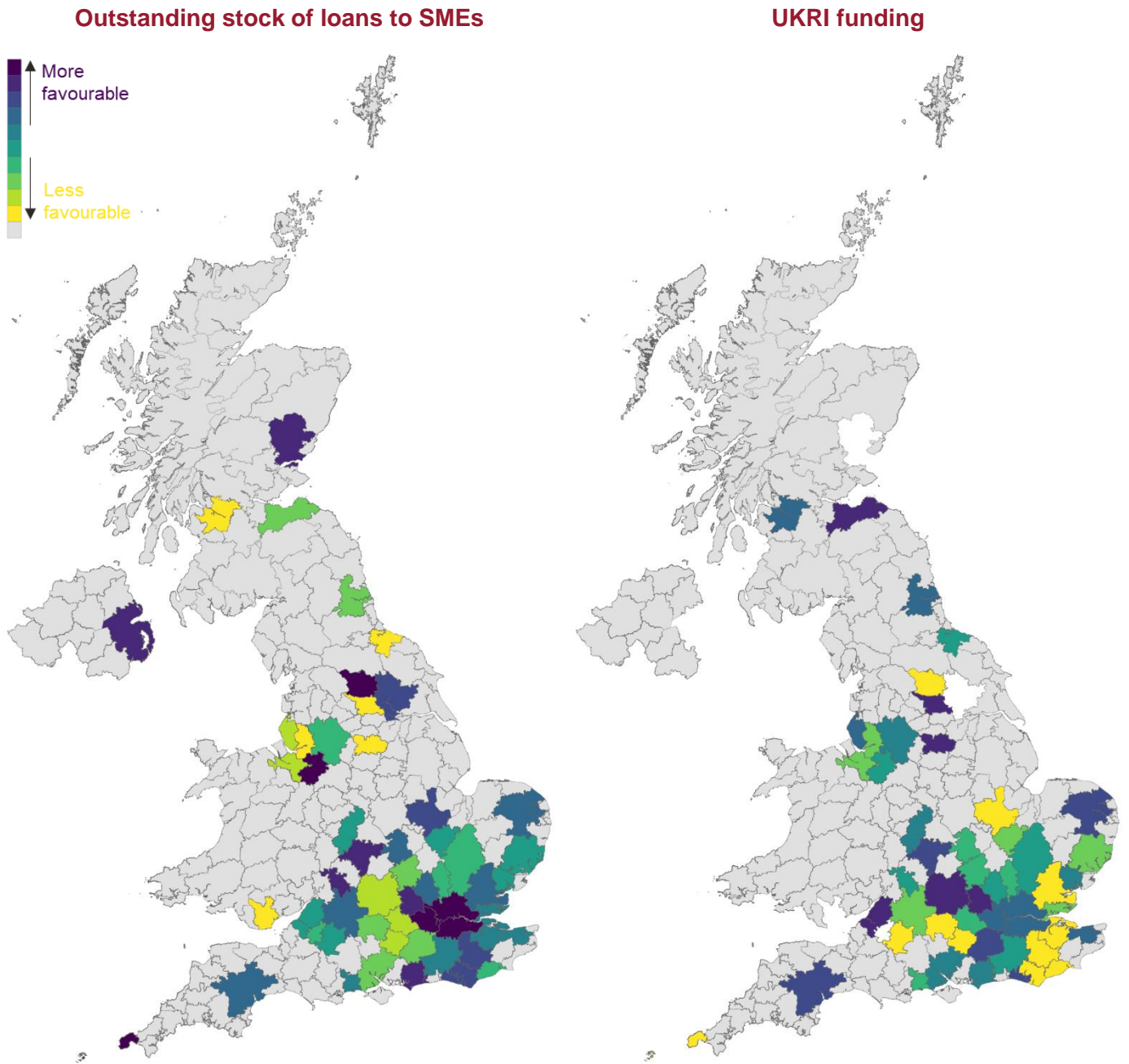
What Works centre for Local Economic Growth (2015) 'Broadband.' Evidence Review 6.

What Works Centre for Local Economic Growth (2016) 'Access to Finance'. Evidence Review 4.



# Annex A – Additional figures

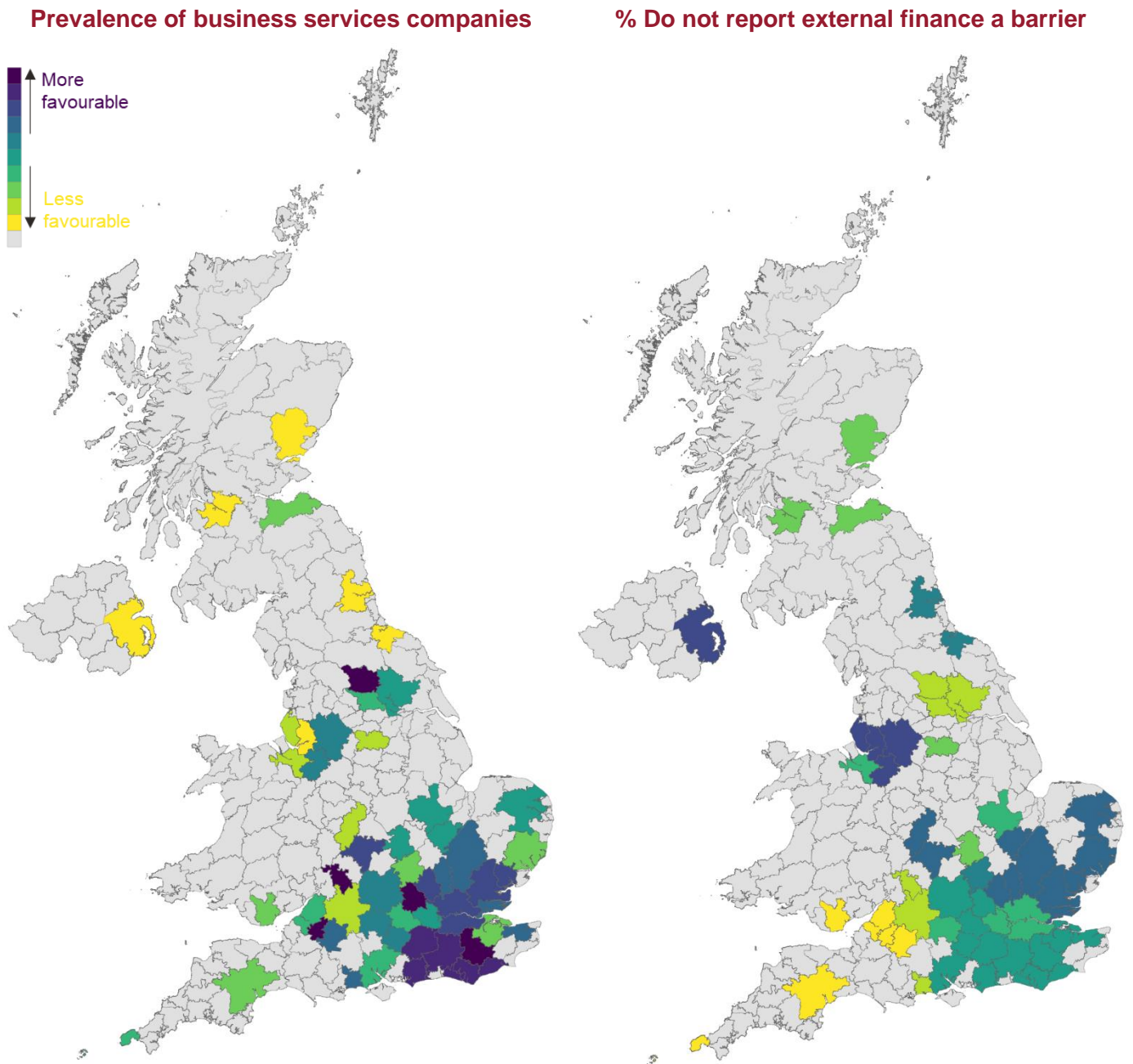
Figure 13 Access to finance indicators



Source: Frontier Economics

Note: The indicator scores are in terms of the difference from the average across all UK TTWAs expressed in standard deviations. More yellow indicates scoring less favourably while blue indicates faring more favourably. These maps have scales that vary for each indicator, with the bands chosen to divide the creative clusters into ten equal-sized groups (deciles) where possible (and fewer groups where there is not enough variation in the indicator across TTWAs to group into ten equal-sized groups – for example indicators that are at the regional level or indicators where many TTWAs share the same value).

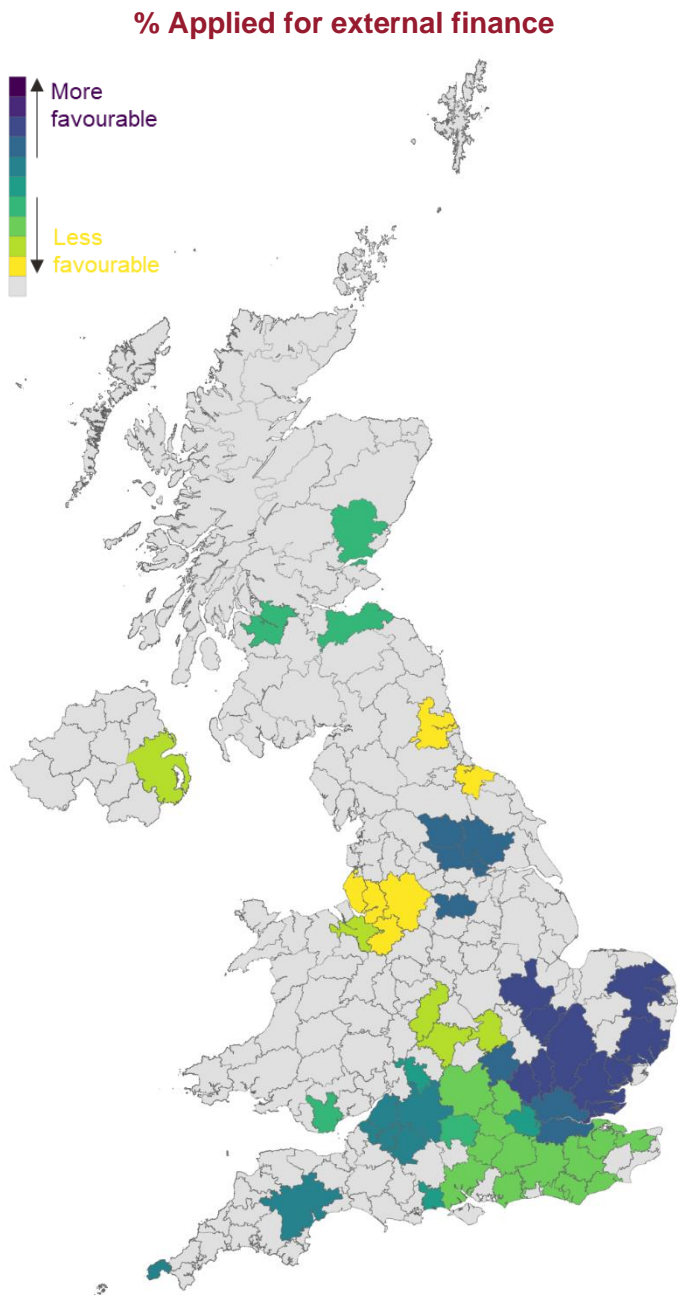
**Figure 24 Access to finance indicators (continued)**



Source: Frontier Economics

Note: The indicator scores are in terms of the difference from the average across all UK TTWAs expressed in standard deviations. More yellow indicates scoring less favourably while bluer indicates faring more favourably. These maps have scales that vary for each indicator, with the bands chosen to divide the creative clusters into ten equal-sized groups (deciles) where possible (and fewer groups where there is not enough variation in the indicator across TTWAs to group into ten equal-sized groups – for example indicators that are at the regional level or indicators where many TTWAs share the same value).

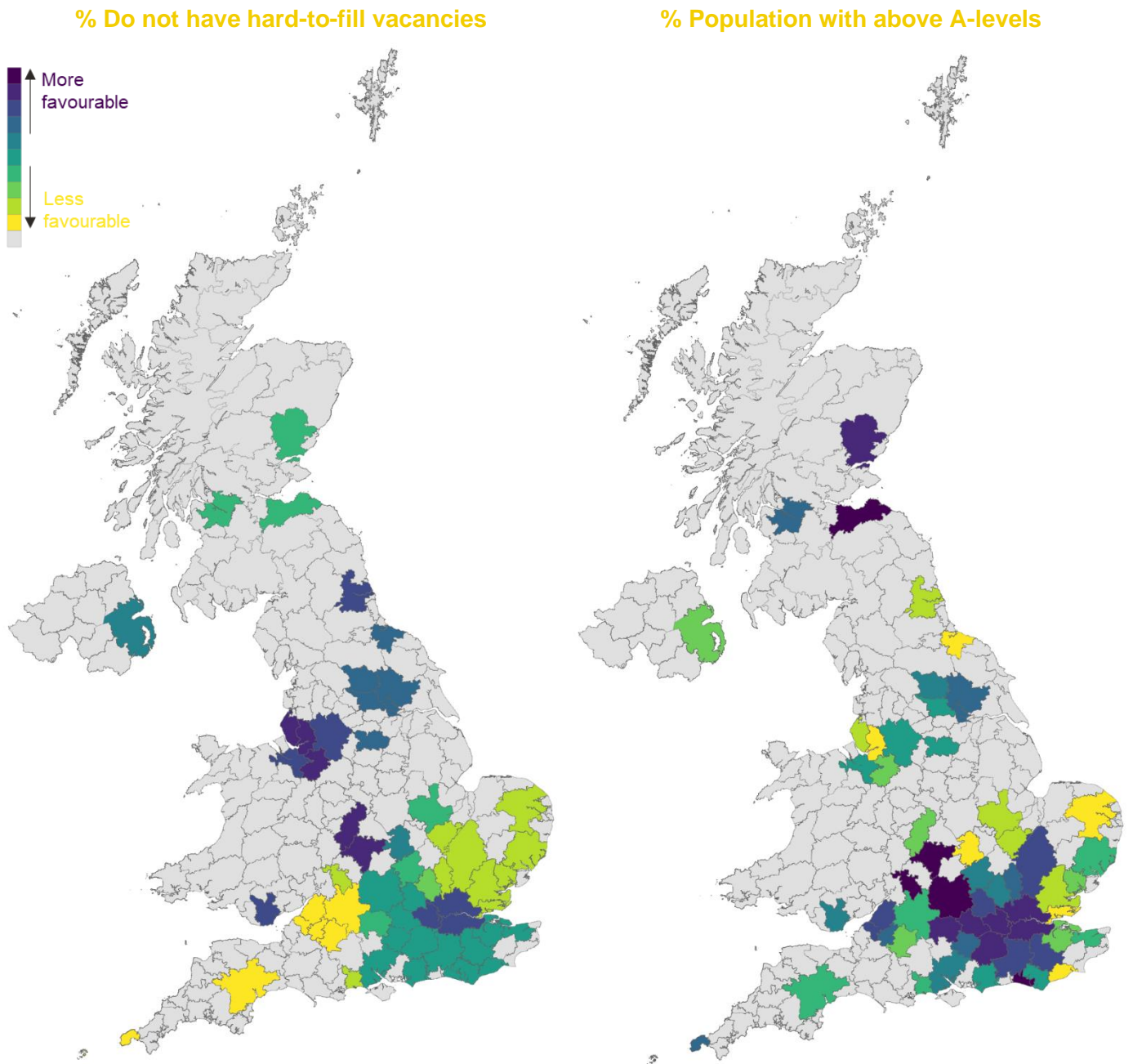
Figure 35 Access to finance indicators (continued)



Source: Frontier Economics

Note: The indicator scores are in terms of the difference from the average across all UK TTWAs expressed in standard deviations. More yellow indicates scoring less favourably while bluer indicates faring more favourably. These maps have scales that vary for each indicator, with the bands chosen to divide the creative clusters into ten equal-sized groups (deciles) where possible (and fewer groups where there is not enough variation in the indicator across TTWAs to group into ten equal-sized groups – for example indicators that are at the regional level or indicators where many TTWAs share the same value).

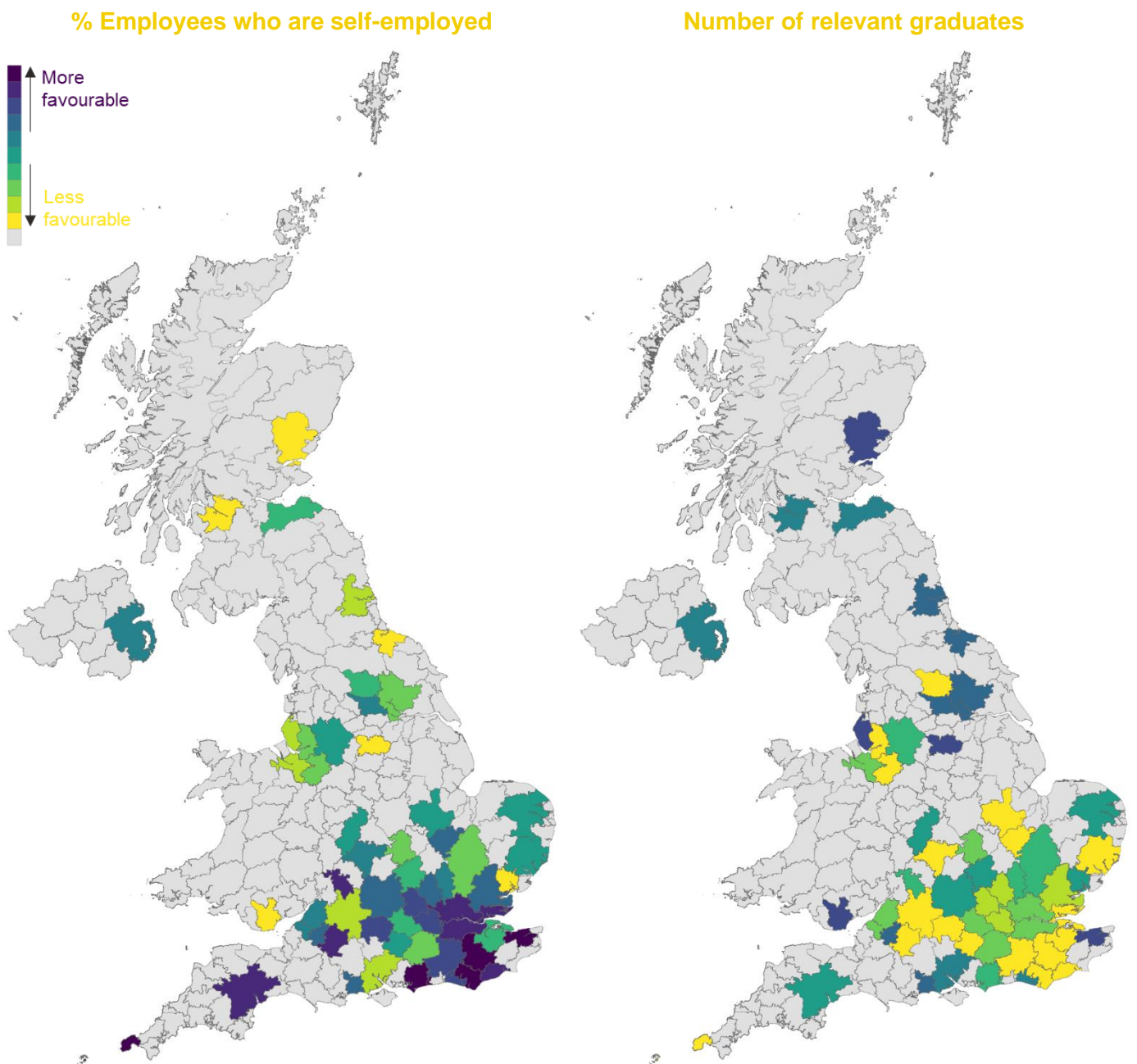
**Figure 46 Access to talent indicators**



Source: Frontier Economics

Note: The indicator scores are in terms of the difference from the average across all UK TTWAs expressed in standard deviations. More yellow indicates scoring less favourably while bluer indicates faring more favourably. These maps have scales that vary for each indicator, with the bands chosen to divide the creative clusters into ten equal-sized groups (deciles) where possible (and fewer groups where there is not enough variation in the indicator across TTWAs to group into ten equal-sized groups – for example indicators that are at the regional level or indicators where many TTWAs share the same value).

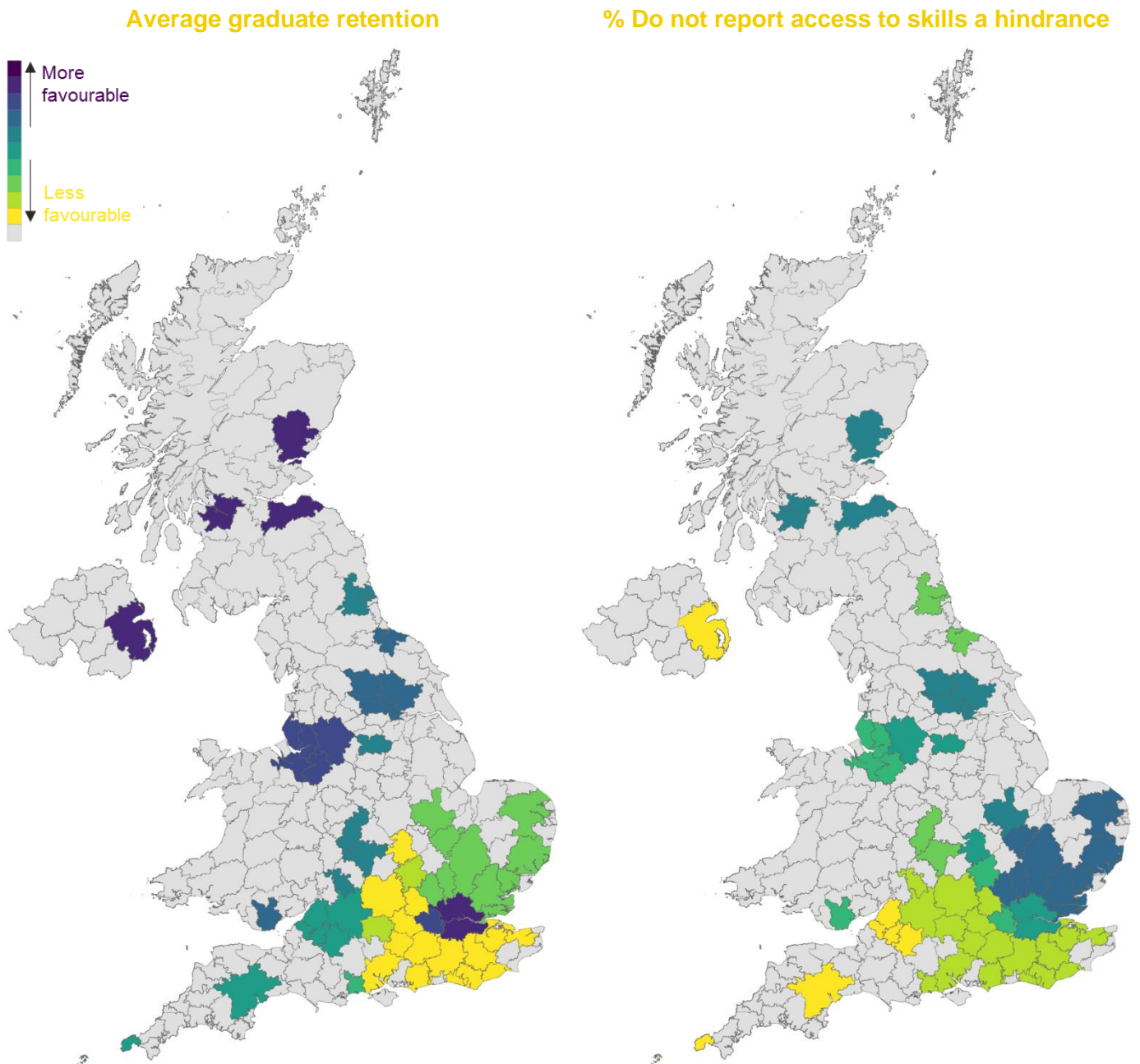
**Figure 57 Access to talent indicators (continued)**



Source: Frontier Economics

Note: The indicator scores are in terms of the difference from the average across all UK TTWAs expressed in standard deviations. More yellow indicates scoring less favourably while bluer indicates faring more favourably. These maps have scales that vary for each indicator, with the bands chosen to divide the creative clusters into ten equal-sized groups (deciles) where possible (and fewer groups where there is not enough variation in the indicator across TTWAs to group into ten equal-sized groups – for example indicators that are at the regional level or indicators where many TTWAs share the same value).

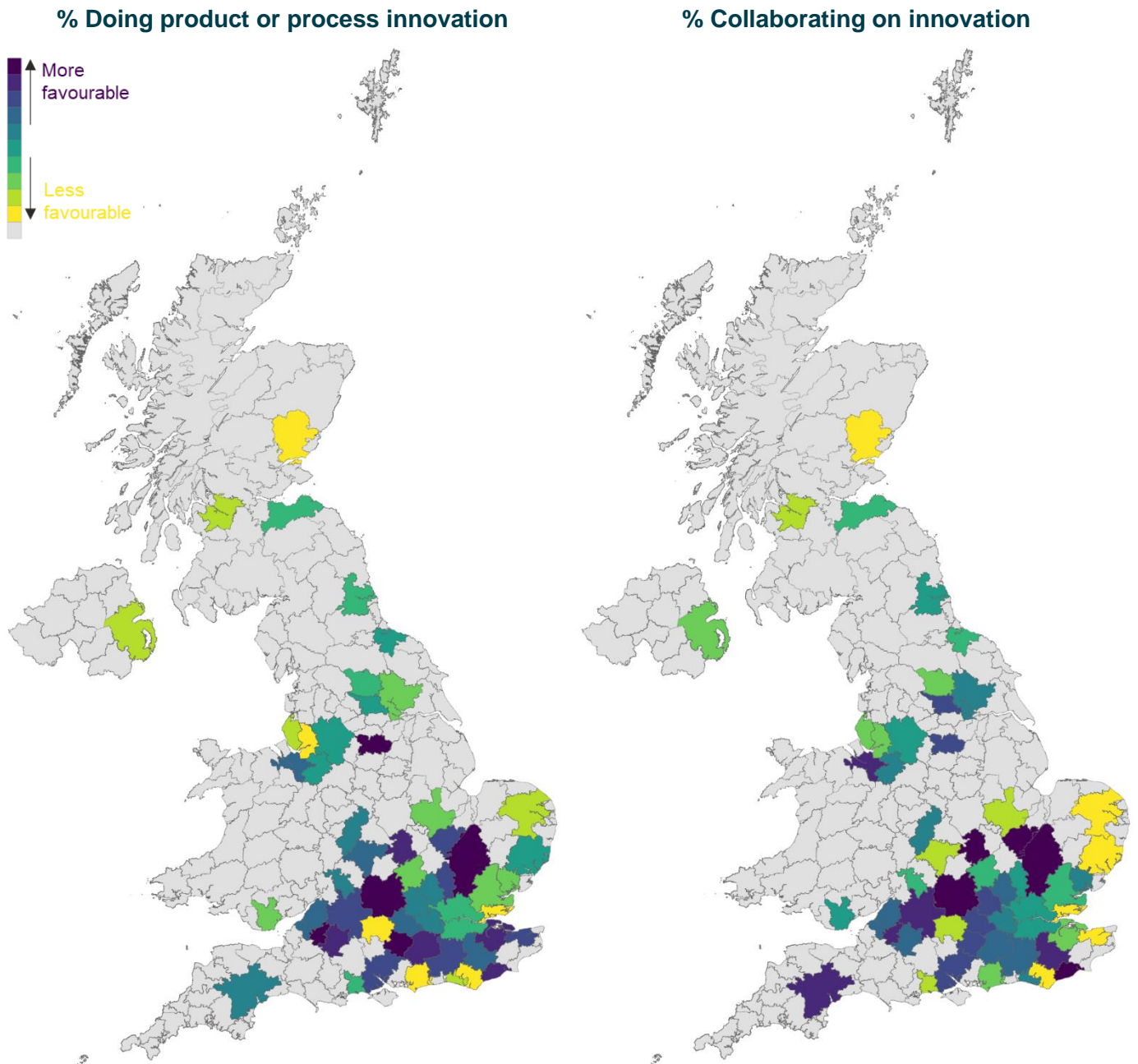
**Figure 68 Access to talent indicators (continued)**



Source: Frontier Economics

Note: The indicator scores are in terms of the difference from the average across all UK TTWAs expressed in standard deviations. More yellow indicates scoring less favourably while bluer indicates faring more favourably. These maps have scales that vary for each indicator, with the bands chosen to divide the creative clusters into ten equal-sized groups (deciles) where possible (and fewer groups where there is not enough variation in the indicator across TTWAs to group into ten equal-sized groups – for example indicators that are at the regional level or indicators where many TTWAs share the same value).

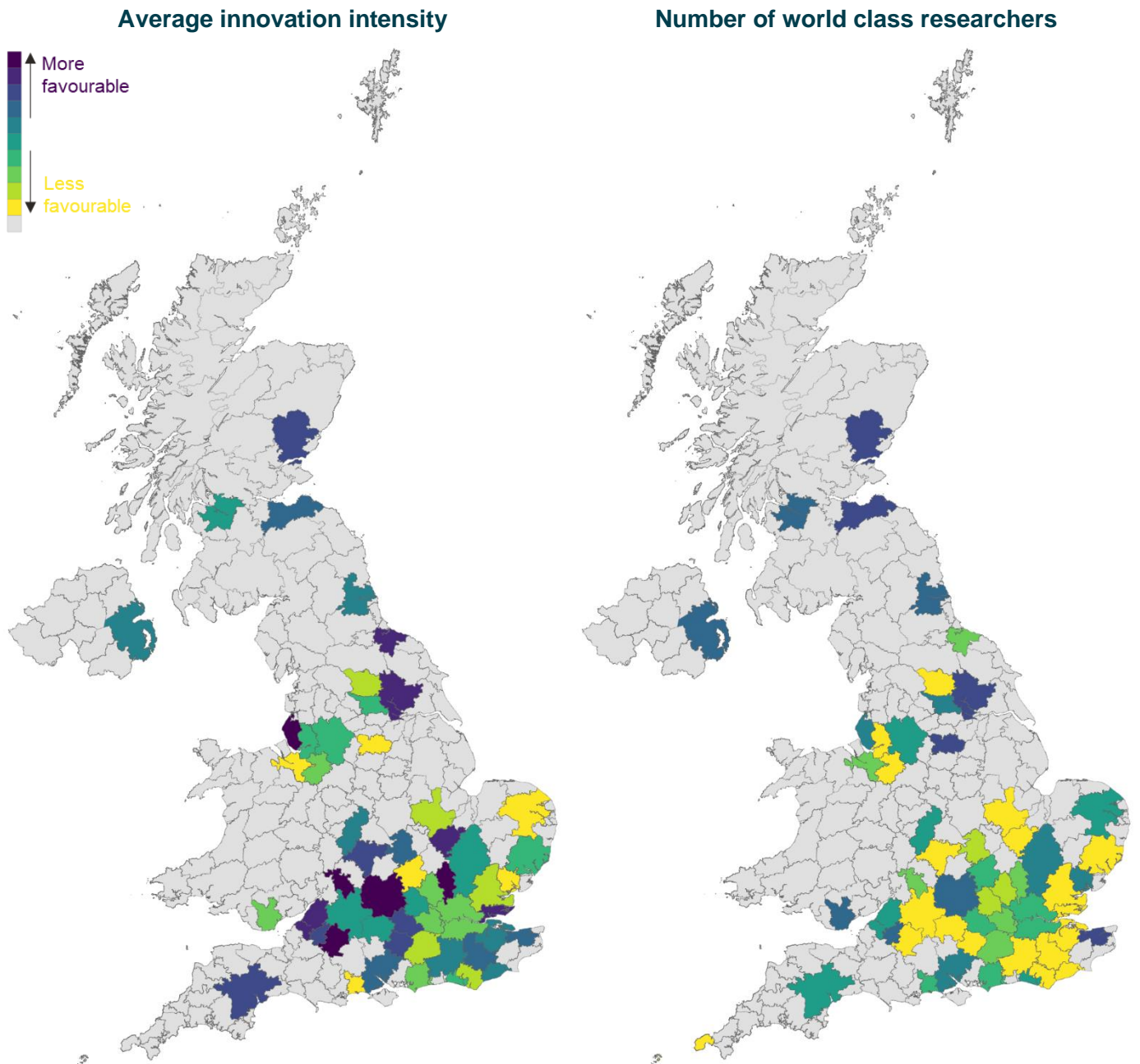
## Figure 79 Innovation indicators



Source: Frontier Economics

Note: The indicator scores are in terms of the difference from the average across all UK TTWAs expressed in standard deviations. More yellow indicates scoring less favourably while bluer indicates faring more favourably. These maps have scales that vary for each indicator, with the bands chosen to divide the creative clusters into ten equal-sized groups (deciles) where possible (and fewer groups where there is not enough variation in the indicator across TTWAs to group into ten equal-sized groups – for example indicators that are at the regional level or indicators where many TTWAs share the same value).

**Figure 20 Innovation indicators (continued)**

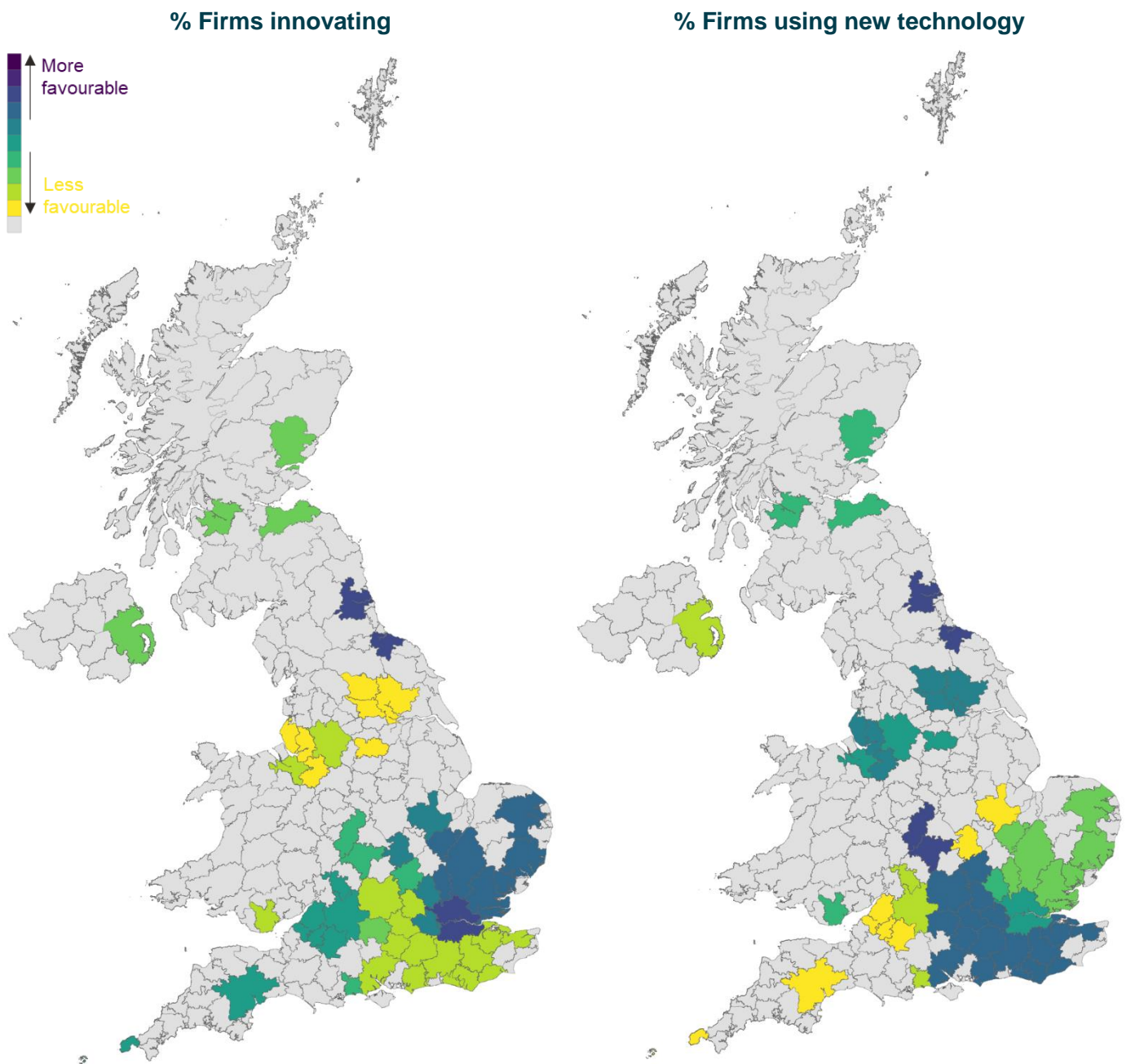


Source: Frontier Economics

Note: The indicator scores are in terms of the difference from the average across all UK TTWAs expressed in standard deviations. More yellow indicates scoring less favourably while bluer indicates faring more favourably. These maps have scales that vary for each indicator, with the bands chosen to divide the creative clusters into ten equal-sized groups (deciles) where possible (and fewer groups where there is not enough variation in the indicator across TTWAs to group into ten equal-sized groups – for example indicators that are at the regional level or indicators where many TTWAs share the same value).



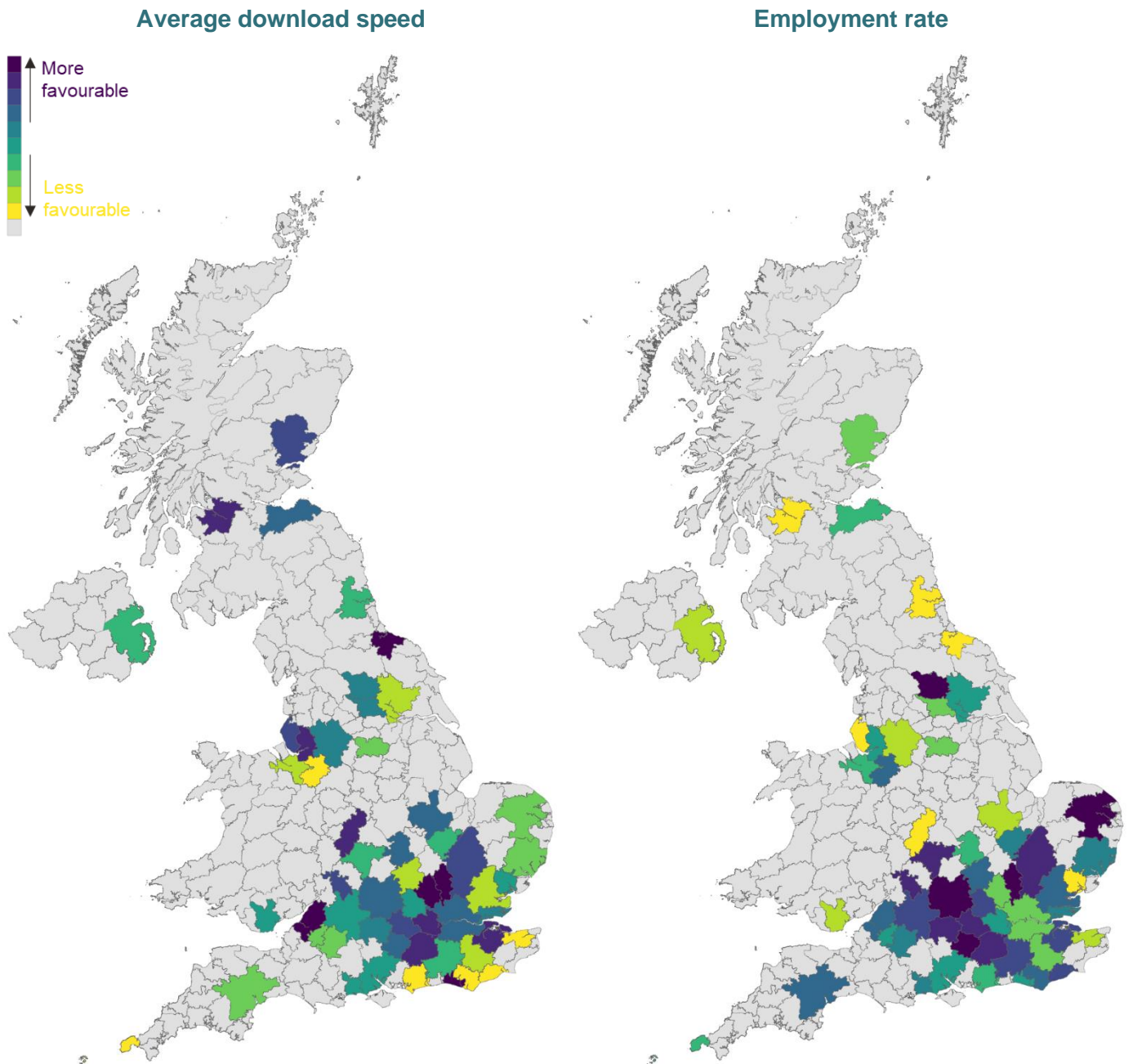
**Figure 21 Innovation indicators (continued)**



Source: Frontier Economics

Note: The indicator scores are in terms of the difference from the average across all UK TTWAs expressed in standard deviations. More yellow indicates scoring less favourably while bluer indicates faring more favourably. These maps have scales that vary for each indicator, with the bands chosen to divide the creative clusters into ten equal-sized groups (deciles) where possible (and fewer groups where there is not enough variation in the indicator across TTWAs to group into ten equal-sized groups – for example indicators that are at the regional level or indicators where many TTWAs share the same value).

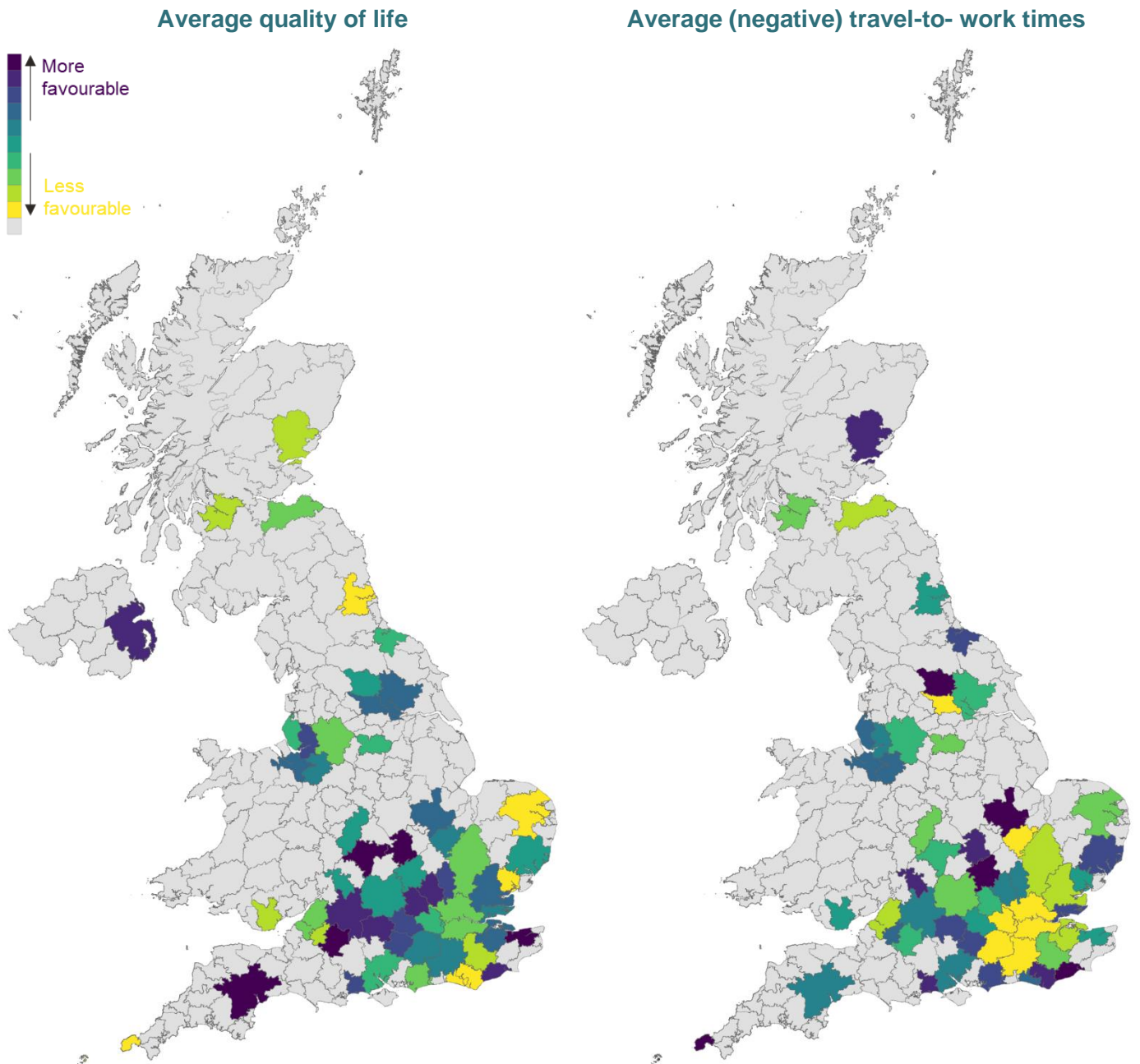
**Figure 22** Broader environment indicators



Source: Frontier Economics

Note: The indicator scores are in terms of the difference from the average across all UK TTWAs expressed in standard deviations. More yellow indicates scoring less favourably while bluer indicates faring more favourably. These maps have scales that vary for each indicator, with the bands chosen to divide the creative clusters into ten equal-sized groups (deciles) where possible (and fewer groups where there is not enough variation in the indicator across TTWAs to group into ten equal-sized groups – for example indicators that are at the regional level or indicators where many TTWAs share the same value).

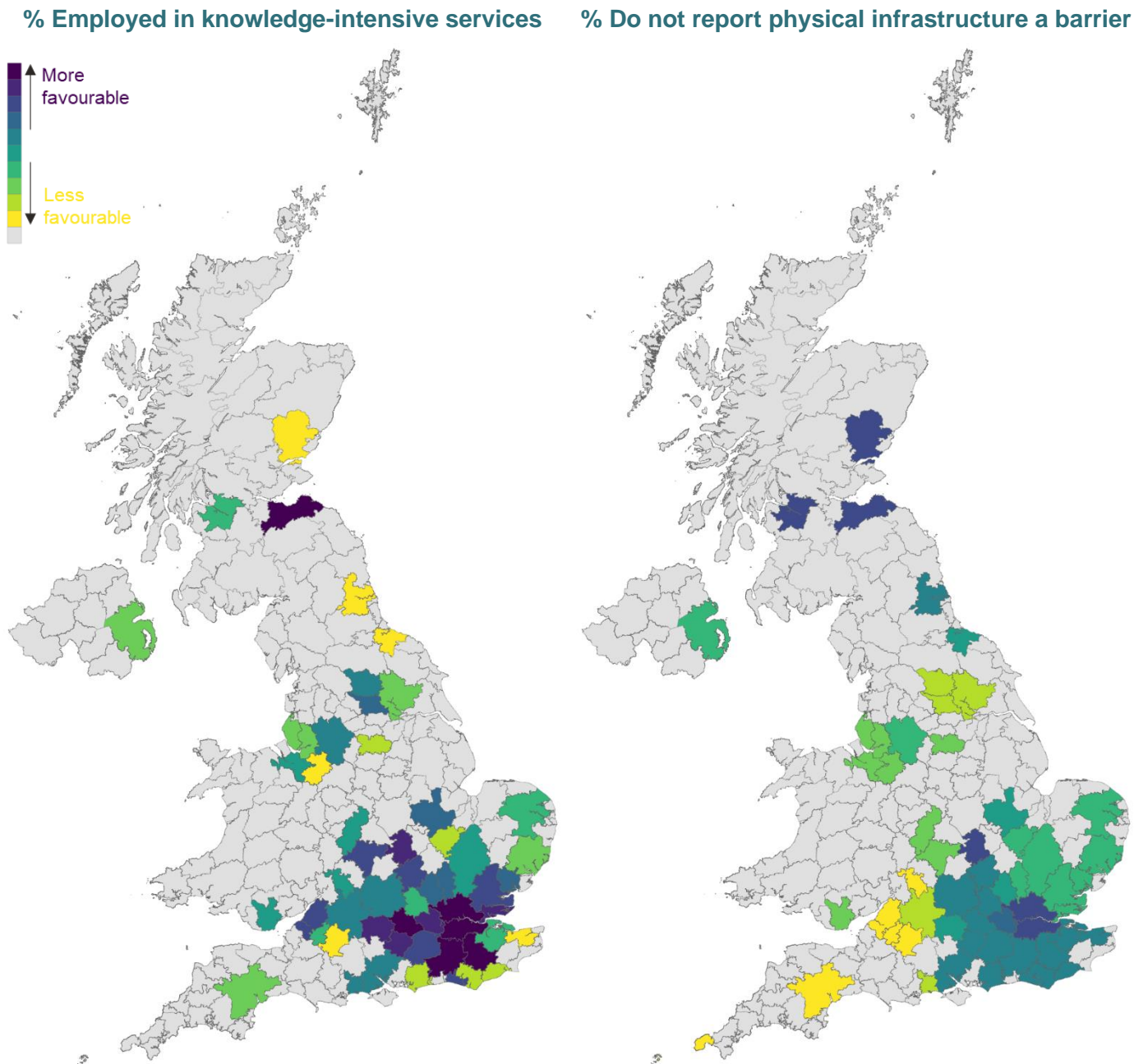
**Figure 23 Broader environment indicators (continued)**



Source: Frontier Economics

Note: The indicator scores are in terms of the difference from the average across all UK TTWAs expressed in standard deviations. More yellow indicates scoring less favourably while bluer indicates faring more favourably. These maps have scales that vary for each indicator, with the bands chosen to divide the creative clusters into ten equal-sized groups (deciles) where possible (and fewer groups where there is not enough variation in the indicator across TTWAs to group into ten equal-sized groups – for example indicators that are at the regional level or indicators where many TTWAs share the same value).

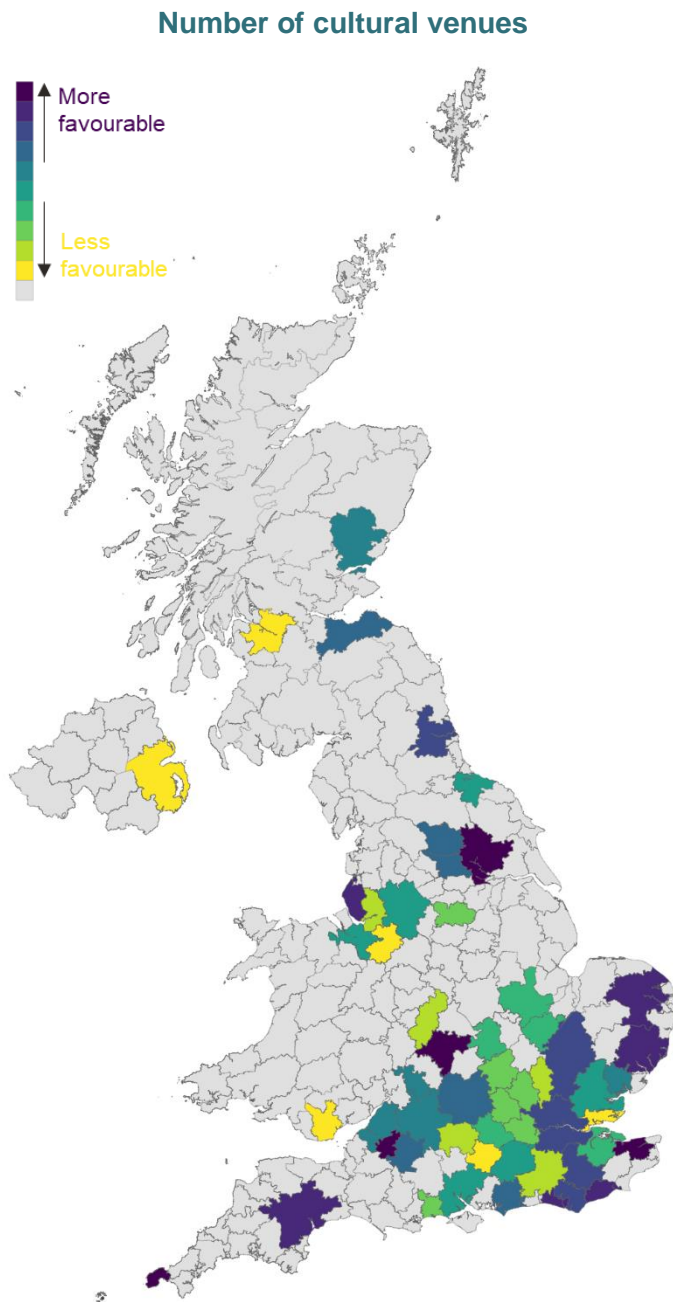
**Figure 24 Broader environment indicators (continued)**



Source: Frontier Economics

Note: The indicator scores are in terms of the difference from the average across all UK TTWAs expressed in standard deviations. More yellow indicates scoring less favourably while bluer indicates faring more favourably. These maps have scales that vary for each indicator, with the bands chosen to divide the creative clusters into ten equal-sized groups (deciles) where possible (and fewer groups where there is not enough variation in the indicator across TTWAs to group into ten equal-sized groups – for example indicators that are at the regional level or indicators where many TTWAs share the same value).

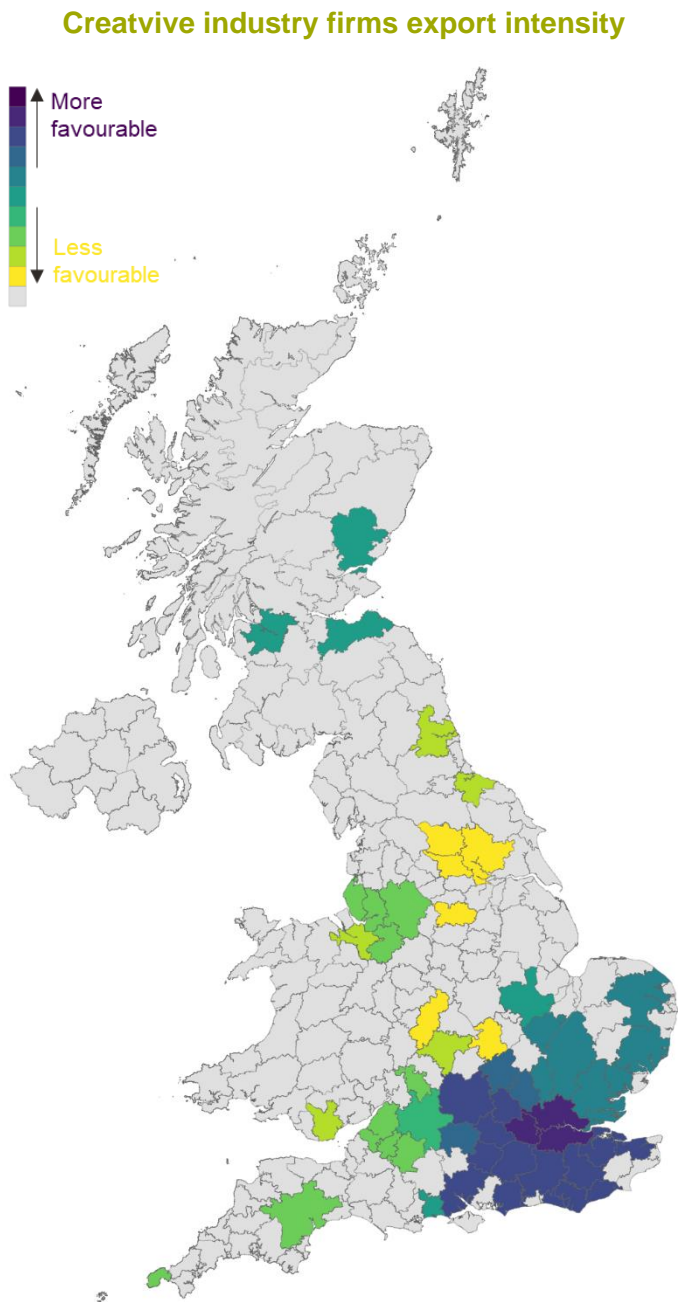
**Figure 25** Broader environment indicators (continued)



Source: Frontier Economics

Note: The indicator scores are in terms of the difference from the average across all UK TTWAs expressed in standard deviations. More yellow indicates scoring less favourably while bluer indicates faring more favourably. These maps have scales that vary for each indicator, with the bands chosen to divide the creative clusters into ten equal-sized groups (deciles) where possible (and fewer groups where there is not enough variation in the indicator across TTWAs to group into ten equal-sized groups – for example indicators that are at the regional level or indicators where many TTWAs share the same value).

Figure 26 Export indicator



Source: Frontier Economics

Note: The indicator scores are in terms of the difference from the average across all UK TTWAs expressed in standard deviations. More yellow indicates scoring less favourably while bluer indicates faring more favourably. These maps have scales that vary for each indicator, with the bands chosen to divide the creative clusters into ten equal-sized groups (deciles) where possible (and fewer groups where there is not enough variation in the indicator across TTWAs to group into ten equal-sized groups – for example indicators that are at the regional level or indicators where many TTWAs share the same value).

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