

Discussion Paper 2022/10

The Role of the University in Enhancing Creative Clusters

Comparing the Cardiff Capital Region and the West
Midlands Combined Authority

Matthew Lyons and James Davies
University of Birmingham, City REDI, Birmingham Business
School

September, 2022
ISBN: 978-1-913095-21-5

**This project is part of the Creative Industries Clusters Programme, which is funded by
the Industrial Strategy Challenge Fund and delivered by the Arts and Humanities
Research Council on behalf of UK Research and Innovation.**

Supported by



About the Creative Industries Policy and Evidence Centre

The Creative Industries Policy and Evidence Centre (PEC) works to support the growth of the UK's Creative Industries through the production of independent and authoritative evidence and policy advice.

Led by Nesta and funded by the Arts and Humanities Research Council as part of the UK Government's Industrial Strategy, the Centre comprises a consortium of universities from across the UK (Birmingham; Cardiff; Edinburgh; Glasgow; Work Foundation at Lancaster University; LSE; Manchester; Newcastle; Sussex; Ulster). The PEC works with a diverse range of industry partners including the Creative Industries Federation.

For more details visit <http://www.pec.ac.uk> and [@CreativePEC](#)

Abstract

This report considers the role universities can play in supporting growth in their local creative industries with a comparative study of the West Midlands Combined Authority and the Cardiff Capital Region.

Creative industries in the two regions have the potential to deliver a raft of economic and social benefits to their regions as fast-growing dynamic sectors. The economic potential of the creative industries has led them to being recognised in policy, at the local, regional, and national level. The creative sector has been an element of UK Government economic policy for the last two decades (McRobbie 2002; Garnham 2005) and most recent iterations of UK policy including the upcoming Sector Vision.

One key obstacle for the growth of the creative industries is the presence of skills shortages in specific sub-sectors and roles. In recent years, the responsibility for upskilling workers in the sector has shifted from Industry to Higher Education providers. Universities are expected to play many roles within their regions, including being attractors of skilled personnel, hubs of innovation and R&D spill over, anchor institutions and globally competitive centres of educational excellence. It may be that universities are being pulled in too many directions, not least from the fragmentation in national governance. With responsibility for Higher Education courses in the hands of the Department for Education (DfE), much of the research function governed via the Department for Business, Energy and Industrial Strategy (BEIS) and some aspects of innovation in the hands of DCMS, it remains an open question how well-suited universities are to closing skills gaps in the creative industries.

Contents

Abstract	3
1. Introduction	5
2. Economic Context.....	8
2.1 Population and Demography.....	9
2.2 Economic Indicators	11
2.3 Defining Creative Activity.....	13
2.4 The Creative Industries & Regional Economies of the WMCA & the CCR.....	14
2.5 Economic Context - Conclusion	17
3. Universities & Regions in the UK.	18
3.1 Barriers to Regional Engagement	19
3.2 Human Capital & Absorptive Capacity.....	21
3.3 Skills Gaps & Training in the Creative Industries	21
3.4 Comparing Higher Education in the West Midlands Combined Authority & the Cardiff Capital Region.....	23
3.5 Conclusion	28
4. The Creative Industries in Regional & National Policy.....	29
4.1 Levelling Up & the Creative Industries.....	29
4.2 Regional Policy	31
4.3 Education & Training	32
4.4 Conclusions & Future Research	34
References	37
Acknowledgements.....	44
Appendices.....	45
Appendix A1: The creative industries SIC codes (2007) DCMS defined. ...	45
Appendix A2: Creative industries vs the Cultural Sector SIC codes (2007)	47

1. Introduction

This report compares two regions; the West Midlands Combined Authority (WMCA) and the Cardiff Capital Region (CCR). It situates the major creative clusters of each region within their geographical and economic context and explores the role of the Higher Education infrastructure in contributing to the continued growth of the creative and digital sectors in the two regions. The cities of Birmingham and Cardiff have been identified by Nesta as 'Creative Challengers' (Mateos-Garcia et al. 2018) – regions noted for specialisation in fast-growing creative industries' sub-sectors. The two regions are also characterised by growing cities with dynamic populations, high levels of creative entrepreneurship, and established creative clusters.

The Creative and Digital Industries are a source of high value, consistent growth in goods and services for exports (UK Government 2018), as well as providing skillsets that have an increasing applicability to other sectors. In 2019, the creative industries were estimated to add almost £116bn in national GVA, and the Digital Sector £150.6bn. The GVA of the creative industries grew by almost double the UK average in the period 2010-2019. Within the Creative and Digital industries, IT, Software and Computer Services were by far the biggest contributor (£47bn in 2019), with Film and Television the next in line (£21.7bn)¹.

The publishing of the UK Government's Levelling Up White Paper² (LUWP) in February 2022 has placed a great deal of focus on regional policymaking, to ensure the UK is able to recover from the economic impact of the COVID-19 pandemic (Martin et al. 2021). But while the role of universities in supporting increased R&D is considered³, the wider civic mission of universities within their regions was largely omitted. Universities can be key players in their host regions, and perform a variety of roles, including attracting and training skilled talent, and in doing so, building regional absorptive capacity, as well as acting as hubs for knowledge exchange, and anchor institutions for regional civic engagement. As a result, exploring the similarities and differences of the two regions, how they may learn from one another, how they may collaborate, and how they both may provide better support for their creative clusters is a timely consideration.

Both regions have substantial creative industry presence already, with TV and Film in the CCR, and video games production in the WMCA. Both regions have similar goals for their creative industries, looking to promote the growth

¹ <https://www.gov.uk/government/statistics/dcms-economic-estimates-2019-gross-value-added/dcms-economic-estimates-2019-provisional-gross-value-added>

² https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1052706/Levelling_Up_WP_HRES.pdf

³ <https://www.midlandengine.org/news-events/why-universities-are-working-together-at-a-regional-level-to-meet-levelling-up-expectations/>

of creative digital sectors in order to progress beyond their Industrial roots, and embrace the digital revolution's demand for 'Createch' (Bakhshi, Djumalieva and Easton 2019) skills.

Additionally, there is sufficient geographical proximity for collaboration, and the presence of emergent and nascent creative and digital clusters (e.g. Leamington Spa & Cardiff Bay) offer a challenge to support continued growth. The promise of cross-sectoral collaboration, and the application of digital and creative skills to other local industries (aerospace, VR interventions in medical science, automotive innovation, and autonomous vehicles) prompts a need to look at the political ecosystem and policy priorities. Finally, both possess a substantial Higher Education Institution (HEI) presence, which can play a key role in providing both knowledge spillovers, and high-skill human capital to their regions. However, further investigation must be conducted into the specificity of what that role is.

TV and Film, and Video Games and IT, are high-growth sectors with huge amounts of potential for further growth, as well as cross-collaboration with other high value-added sectors, such as aerospace and medicine. However, they are suffering from serious skill shortages and gaps in experienced positions, that threaten their continued prosperity. Universities can help address these skills gaps, but face different foci and pressures, both internal and external, that can act as a barrier to universities contributing fully to their regional civic mission.

As the first part of a multi-stage project investigating the nature of the relationship between creative clusters and Higher Education this comparative case study provides an overview of the economic context of the two regions, the avenues through which HEIs support their creative sectors and an understanding of the policy landscape in the creative industries at the national and regional level. The report concludes that there are three areas that must be better understood to enhance the economic potential of regional creative clusters:

- Mapping Skills Gaps: There are skills gaps present in each regions creative cluster which are having a significant impact on the growth of creative industries sectors. However, there is little data on what skills are missing at the regional and sub-sectoral levels.
- Recent Policy Developments: The impact of funding, from COVID relief, Brexit & Shared Prosperity Fund shortfalls or Levelling Up discretionary funding decisions on HEIs will have had a significant impact on regional creative clusters. There needs to be a greater understanding of the consequences of these changes for creative industries firms.
- The Role of HEIs and other Institutions: The report highlights that HEIs play multiple roles in supporting the national and local economy. HEIs in their role of skills providers could play a significant role in closing skills

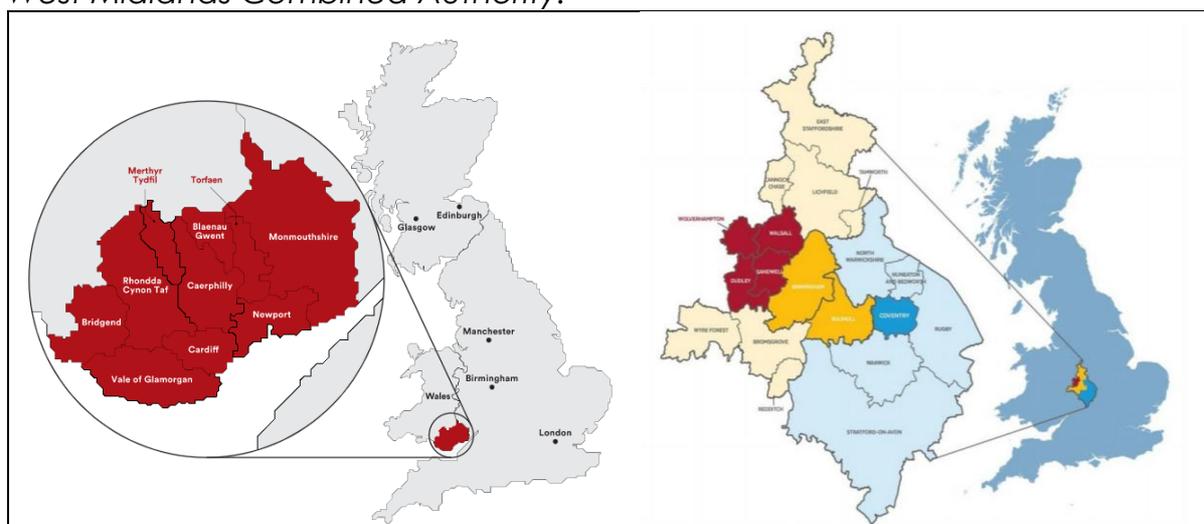
gaps. However, there is some debate about the effectiveness of this approach in the creative industries.

The report begins with an overview of the economic context of the WMCA, and CCR regions.

2. Economic Context

The two geographies of interest to this study are the South-East Wales creative cluster and the West Midlands creative cluster. The most appropriate political boundaries that capture these clusters are the Cardiff Capital Region and the West Midlands Combined Authority (Figure 0.1). This section will detail how these two regions compare in terms of demography, economy, and the composition of their respective creative industries.

Figure 0.1 *The two geographies of focus, The Cardiff Capital Region and the West Midlands Combined Authority.*



Sources: CCR⁴ and WMCA

The Cardiff Capital Region (CCR) is a political boundary, established in March 2016, as part of the UK Government's City & Growth Deals. The CCR, in South-East Wales, includes a collection of 10 local authorities. South-East Wales, despite being the smallest of the three regions of Wales by land area, is the most populated with a population of over 1.53 million people, just under half of the total population of Wales. The CCR houses the Capital of Wales, Cardiff, the city of Newport and a series of smaller towns. The geography of South-East Wales is characterised by the coastline to the South and the Welsh Valleys to the North.

The CCR City-Deal⁵ is a 10-year economic investment programme, aimed at raising Wales' national GVA by 5%, the creation of 25,000 new jobs and leveraging an additional £4bn of investment. A key element of CCR regional policy is increased external investment from outside Wales. The CCR will be a key driver in Wales' national attempts to overcome its GVA shortfall and continue its above average growth. And with Cardiff itself home to 60% of all

⁴ <https://www.cardiffcapitalregion.wales/about-ccr/>

⁵ <https://www.cardiffcapitalregion.wales/the-city-deal/>

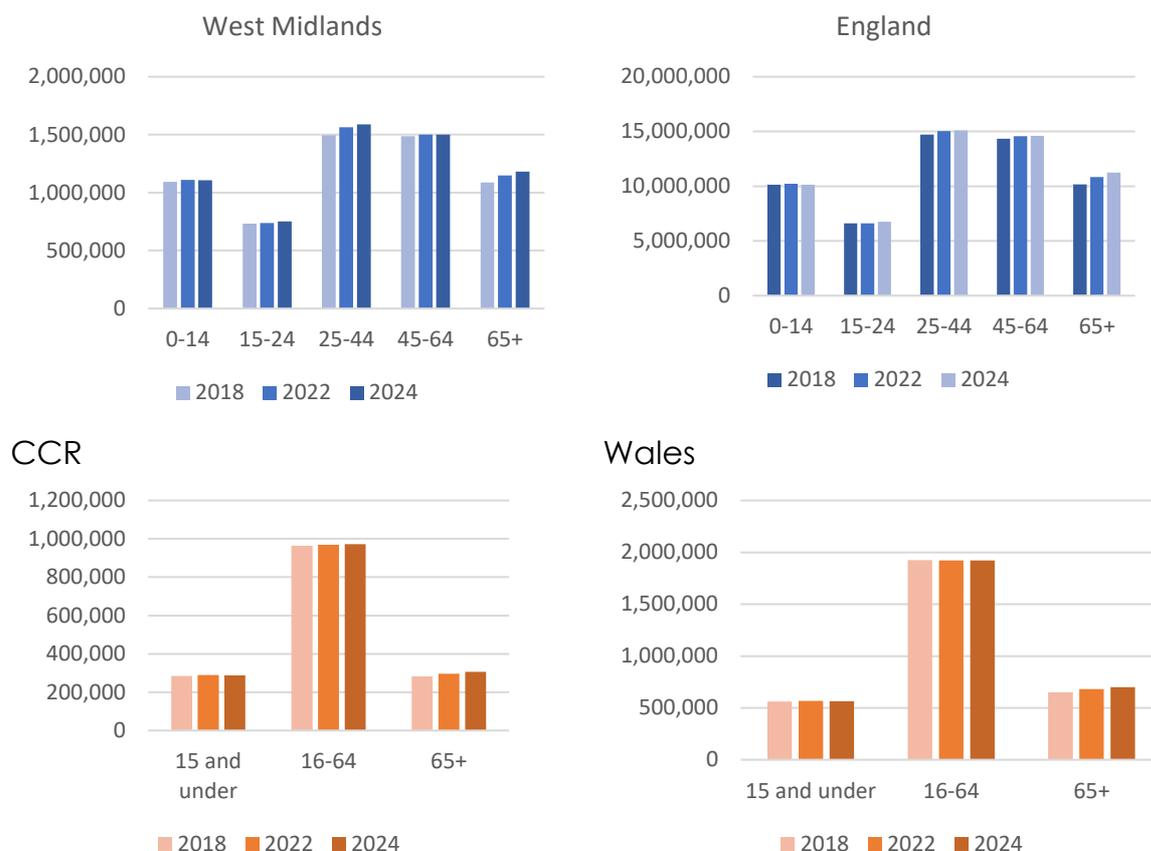
creative companies in Wales, the Creative industries will play a key role in any future growth.

The West Midlands Combined Authority (WMCA) is a larger geographic and political area that includes 18 local authorities and 3 Local Enterprise Partnerships (LEPs). The WMCA is one of the most densely populated regions in the UK outside of London, with a population of over 2.9 million. The WMCA encompasses the second most populous city in the UK, Birmingham, and other major cities and towns, including Coventry and Wolverhampton. The WMCA has developed a Strategic Economic Plan (SEP), an £8 billion programme of investment to be implemented by 2030. The SEP has defined investments in connectivity, innovation, skills and housing and links to the UK Government's Industrial Strategy. The WMCA, like the CCR, is placing an emphasis on the importance of the creative industries in driving growth for the region.

2.1 Population and Demography

The population of the UK is growing older, a trend that applies to a greater or lesser extent to regions across the nation. Figure 0.2 shows this trend, with the share of the population over 65 growing faster than any other demographic. Metropolitan areas like Cardiff and Birmingham are somewhat insulated to this trend as younger workers move to cities for work or study. However, other local authorities within the respective city-regions are likely to be seeing a net out-migration.

Figure 0.2 Population projections by age group for the Cardiff City-region and West Midlands.



Sources: ONS and StatsWales

The population profiles of the West Midlands and Cardiff Capital Region vary significantly in terms of skills, diversity and density. Table 0.1 shows the comparison between the qualification levels present in the two regions. The table shows that East Wales tracks the England and Wales average. The West Midlands, however, has a higher share of its population without qualifications and a higher share of those with the highest qualification levels (NVQ 4+).

Table 0.1 Qualification levels no qualifications and NVQ4+ of adults 16-64 in 2020

	% With no qualifications	% With degree equivalent
East Wales	6.6	43.1
West Midlands	10.2	34.7
England and Wales average	6.3	42.6

Source: ONS Annual Population Survey

The distribution of the population within each region also differs significantly. Though economic activity in the region is centred around the city of Cardiff, only 362,000 (24%) of the region's 1.5m population lived in the city in 2017,

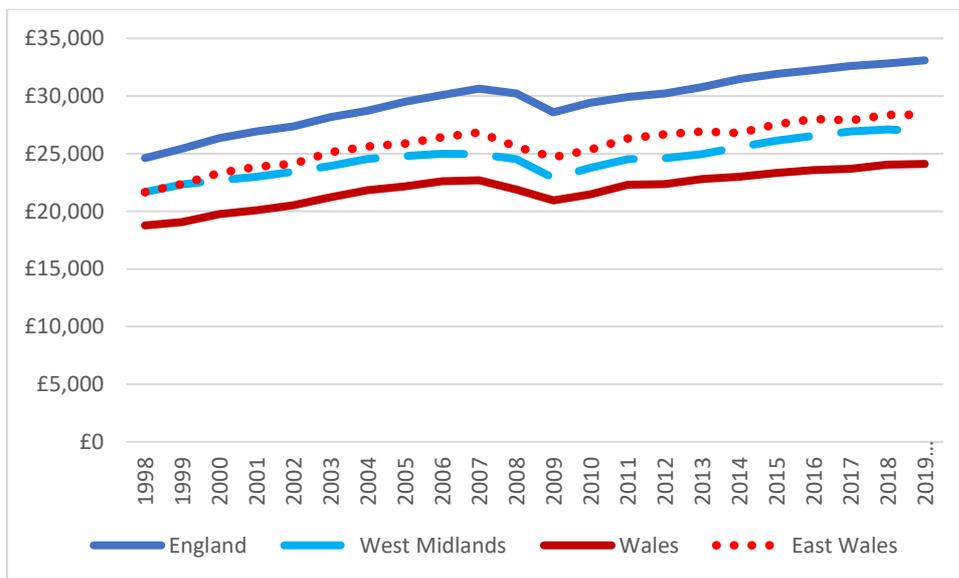
with the Rhondda Cynon Taf Local Authority providing another 240,000 (16%). Population growth is also projected to be around half that of the West Midlands between 2015-2025.

2.2 Economic Indicators

The poor performance of UK regions relative to London and the South East is well known and a key focus of economic development policy of successive governments (Martin et al. 2021). The WMCA and the CCR both have explicit goals to boost economic growth and achieve productivity uplift. At a national level both areas are a target for 'Levelling up', the UK Government's flagship economic development policy (see section 0).

Gross domestic product (GDP) is a frequently used statistic to compare economic performance across regions. Figure 0.3 shows GDP per head for the selected regions from 1998 to 2019. The data shows that both the West Midlands and East Wales track with England and Wales. However, both regions lag behind England, and outperform Wales (nationally).

Figure 0.3 Gross Domestic Product (GDP) per head 1998-2019 in England, Wales, East Wales, and the West Midlands



Source: ONS

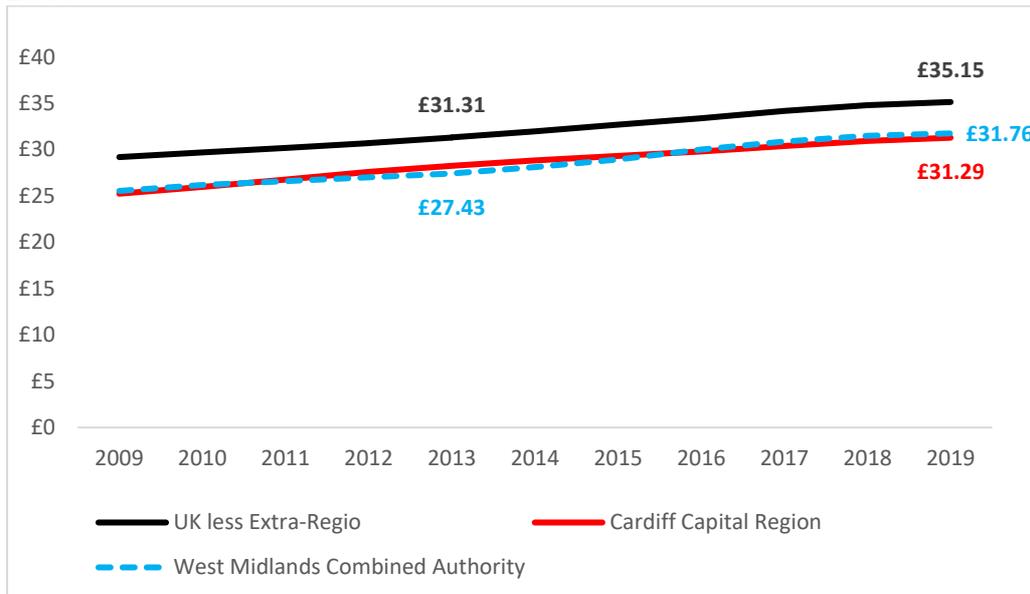
Gross Value Added (GVA) is the value of industrial output less the intermediate inputs used in production⁶. GVA is a useful proxy for regional output due to how closely it tracks GDP. While GVA is a useful measure of regional productivity, it cannot be used to reveal the welfare outcomes of

⁶<https://www.ons.gov.uk/economy/grossdomesticproductgdp/methodologies/aguidetointerpretingmonthlygrossdomesticproduct#gva-or-gdp>

that region, as it is not possible to determine whether GVA generated is retained, as workers may be commuting from another region.

Figure 0.4 shows GVA per hour worked from 2009 to 2019. The graph shows that the UK average outperforms the two regions again, driven by the London outlier. Interestingly, in a reversal of the GDP example in Figure 0.3, the West Midlands is marginally outperforming the Cardiff Capital Region.

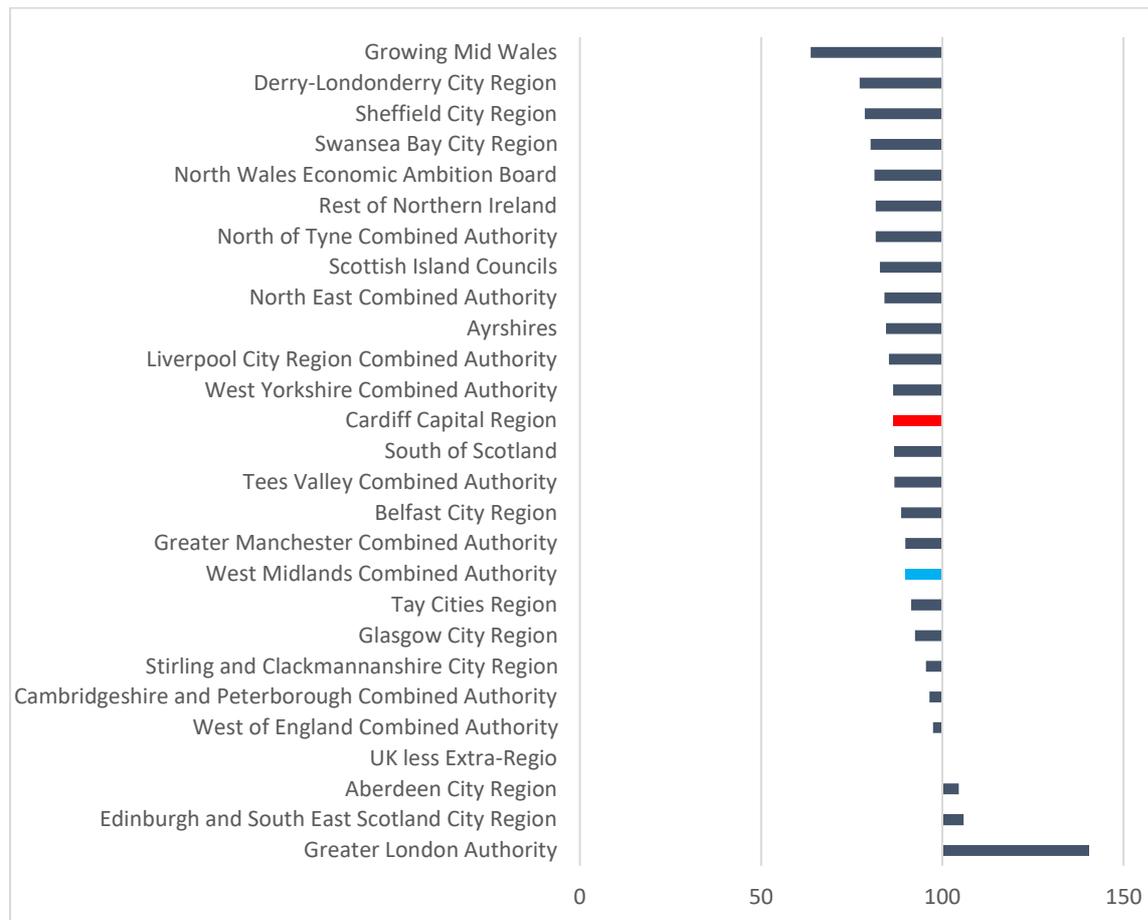
Figure 0.4 GVA per hour worked (£) in the CCR, WMCA and the UK, 2009 – 2019



Source: ONS

Figure 0.5 shows how the West Midlands and CCR compare to other city regions in the UK in terms of GVA per filled job in 2019. The figure shows, unsurprisingly, London far outperforms other UK city-regions. The West Midlands is 10th and the CCR 15th, significantly outperforming all other city-regions in Wales.

Figure 0.5 GVA per filled job indices in UK City Regions compared, 2019



Source: ONS

2.3 Defining Creative Activity

Deciding what makes a particular activity ‘creative’, and what makes up the ‘creative industries’, is notoriously difficult. Adorno and Horkheimer coined the term ‘the culture industry’ in 1944, and in the decades that followed there have been numerous iterations; from Florida’s (2002) creative class to the refinement of DCMS industry-based approaches. Contemporary definitions of the creative industries remain unsettled, in what Flew & Cunningham (2010) refer to as the ‘struggle for definitional coherence’.

It is beyond the scope of this report to discuss the issues and merits of the competing definitions and approaches to measuring creative employment. In the interests of clarity, this report adheres to the DCMS Standard Industry Classifications (SICs) for ‘Creative Industries’ and ‘Digital Sector’ (see appendix A1), in an attempt to sufficiently cover the increasing demand for ‘Createch’ (Bakhshi, Djumalieva and Easton 2019) roles that combine digital technology skillsets with creative and artistic subjects. We acknowledge that this form of classification is not perfect, SICs are increasingly outdated and fail

to cover large proportions of modern work (Mateos-Garcia, Bakhshi and Lenel 2014).

2.4 The Creative Industries & Regional Economies of the WMCA & the CCR.

The creative industries (CI) have been subject to much policy attention at national and regional levels. In 2018, the UK Government's Sector Deal set a plan to boost the creative industries in the UK regions, considering economic impact in terms of growth, productivity uplift and jobs created. The creative industries are increasingly included in regional economic development plans, and are recognised as an important area for economic development in the WMCA⁷ and the CCR⁸.

This enthusiasm for the CI stems from its rapid growth in recent years, and links to innovation in the local economy (Bakhshi & McVittie 2009; Innocenti & Lazzeretti 2019). Furthermore, there is emerging evidence suggesting the creative industries produce 'multiplier effects' (Lee & Clarke 2017; Gutierrez-Posada et al. 2021), as well as an indication that CIs can be more 'embedded' in their local economy than other sectors. 'Embeddedness' in this sense is characterised by more local purchasing patterns, and ultimately an outsized impact on the local economy as a result of investment in such sectors.

The creative industries⁹ are currently a minor contributor to the regional economies of the CCR and the West Midlands, representing 2.91% and 3.13% of full-time equivalent (FTE) employment in each region respectively (Table 0.2). Despite representing a relatively small part of the economy, some sub-sectors of the creative industries are fast-growing, and present an opportunity to deliver significant economic benefits for their host regions.

Table 0.2 *Creative industries employment profiles in 2019*

	East Wales	West Midlands
Proportion of FTE that is in the creative industries	2.91%	3.13%
Total employment (FTE)	371,530	851,375
Creative industries employment (FTE)	10,825	26,630

Source: ONS

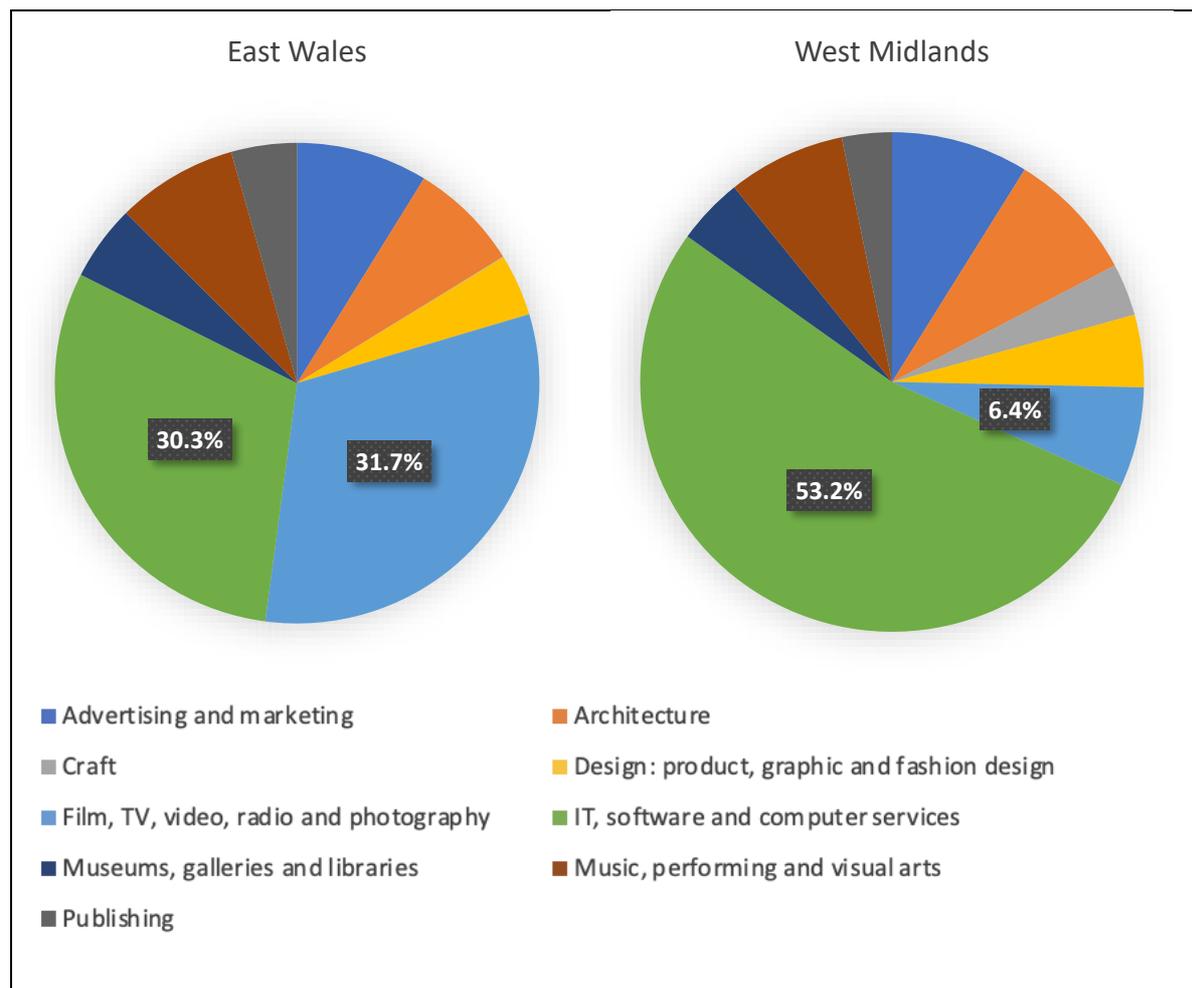
⁷ <https://www.wmca.org.uk/media/3094/west-midlands-local-industrial-strategy-single-page.pdf>

⁸ <https://www.cardiffcapitalregion.wales/wp-content/uploads/2021/10/ccr-reimagining-our-region-final.pdf>

⁹ The creative industries are defined using the DCMS classification see Appendix A1.

The two regions have different, but overlapping, sub-sector specializations (Figure 0.6). A large proportion of CI FTE in the CCR is found in the DCMS defined 'Film, TV, video, radio and photography' sector (32%). A figure significantly higher than in the WM (6%). A large proportion of both WM and CCR creative employment is found in the DCMS defined 'IT, software and computer services sector' 53% and 30% respectively.

Figure 0.6 Creative industries employment (FTE) East Wales vs the West Midlands in 2019



Source: ONS

Employment in the CI is notoriously challenging to estimate, due to issues of misclassification, difficulty counting freelancers and hidden employment (Lyons 2022). Different organisations have produced their own estimates on creative employment in the CI, with considerable variation. Clwstwr estimated 80,000 to be working in the creative industries across Wales, either as employees or freelancers¹⁰. Furthermore, the CIs, as defined by DCMS, house considerable overlap with cultural sectors, which have different objectives placed upon them. The sectors linked with 'Createch' and high-

¹⁰ The creative industries are defined using the DCMS classification see Appendix A1.

value industries, like software design, have clearer links to economic growth and development than other cultural industries, like museums and craft, whose benefits are often non-pecuniary.

The CCR specialisation in the screen sector is largely located in Cardiff, notably Cardiff Bay. Major employers in this sector include the BBC in Cardiff, estimated to employ over 1,000 (FTE). Other large film production companies in Cardiff include Bad Wolf and Pinewood Studios, responsible for the production of TV series such as *Doctor Who*, *His Dark Materials* and others. There is an emerging video games cluster, with an estimated 38 games companies¹¹ including Thud Media and Tiny Rebel games. Despite the concentration of Film and TV production in Cardiff there are some large creative businesses throughout the city-region such as Dragon Studios in Llanilid, a production studio with five stages set in a 100-acre site. The concentration of creative firms in Cardiff poses a challenge, with the population of the CCR distributed across the South Wales valleys. It is important that the CCR region enables its population to be a part of that growth, not only through connectivity and infrastructure but by supplying these industries with local talent in possession of the skillsets that form the foundation of creative and digital growth. However, it must be acknowledged that the Film and TV sector has often failed to be representative of the wider population (Carey et al., 2021). Growth in the Film and TV could risk widening inequality in Wales (Lyons, 2022), and though there have been efforts to increase the inclusivity of the screen sector in Wales (Ffilm Cymru, 2020), this is an issue that cannot be ignored.

The West Midlands' creative industries centre around the IT, Software and Video Games sectors, focused around the 'Silicon Spa' development cluster in Leamington Spa, with a growing production base for 'High End' Television Production (HETV) in Digbeth in Birmingham. The 2018 West Midlands Local Industrial Strategy acknowledged the value of both sectors, the Leamington cluster makes up 10% of the entire UK games industry, including world renowned studios Codemasters, Playground Games and Ubisoft, whereas Digbeth is home to BBC 3, the BBC Academy. In January 2022, BBC Director of Nations Rhodri Talfan-Davies drew attention to the intent to move the BBC Asian Network and Newsbeat teams to the West Midlands as part of the BBC's Across the UK plan¹².

¹¹ Clwstwr 2022: https://clwstwr.org.uk/sites/default/files/2022-04/Games%20Survey%20Wales%202021_0.pdf

¹² <http://downloads.bbc.co.uk/aboutthebbc/reports/reports/the-bbc-across-the-uk.pdf>

2.5 Economic Context - Conclusion

The WMCA and CCR have creative clusters poised to generate economic benefits for their regions. Both regions have the ingredients necessary to see growth of their respective sectors; highly skilled, diverse, young urban populations and an agglomeration of creative businesses. Policy in both regions prioritizes the creative sectors and seeks to foster growing creative clusters. The literature suggests that creative industries can generate multipliers for their local economies (Bryan et al. 2000; Gutierrez Posada et al. 2021; Lyons 2022). Furthermore, there is evidence that creative industries can be more embedded in their local economies than traditional industries (Bryan et al. 2000), meaning the expansion of creative industries within these local economies could have substantial innovation spill over benefits (Bakhshi & McVittie 2009), and a variety of opportunities for cross-sectoral collaboration with adjacent industries, including aerospace, automotive and life sciences.

However, there are some issues that should be considered to optimise the clusters' ability to boost the local economy. An agglomeration of creative businesses alone is not enough to provide the benefits associated with clustering. An important factor is the connectivity between firms, collaborators and other sources of innovation (Chapain et al. 2010). Additionally, there are some potential drawbacks to investment in the creative industries. Not all creative sub-sectors produce high GVA per head activity (Lyons 2022). Therefore, expansion of the creative industries could drive down regional productivity. Another persistent issue across the UK, but felt acutely in the CIs, is the presence of skills gaps. These skills gaps can act as barriers to growth for creative sectors, which investment alone cannot overcome. There are different policy and investment levers that can be pulled to address the issues of skills gaps, inter-industry collaboration and poor productivity. There are some key questions about what mechanisms might be best placed to unleash the potential of the creative clusters in these two regions. Can higher education institutions help close skills gaps? Can targeted policy action increase productivity and innovation between creative sectors? The report will continue by covering the role universities can play within regional creative economies.

3. Universities & Regions in the UK.

The role and focus of universities within the regions of the UK has been the subject of consistent attention, examination and change. Traditionally, universities were treated as sites of privilege and seclusion, separated from the practicalities of the regions in which they existed (Harrison and Turok 2017). Recently, more purposeful and practical perspectives have replaced such a notion, but the number of rising expectations placed on modern universities has been matched by profound shifts in universities' culture, organisation and leadership. Considering the role of Higher Education Institutions (HEIs) in enhancing the creative clusters in two high-growth regions in the UK offers contribution to Bloom's call for more research linking universities to the creative industries:

"More research is also needed to identify the work that is currently being done in linking creative higher education courses with industry, so that connections between universities and the creative industries can be strengthened." (Bloom, 2020, p.42)

Attempting to emphasise the role of the university within its region has been an ongoing process. The idea of the Civic University mission traces its roots back to major players in both the CCR and the WMCA; with the formation of the University of Wales in 1893, and the 19th century development of institutions in industrial English cities such as Birmingham, Manchester and Sheffield (Goddard et al. 2018). Both regions have the civic mission inherent in the DNA of their higher education landscape. Throughout the 20th century, a process of nationalisation and a series of policy reforms was seen to erode the civic mission of the English universities. In the 1990s, the establishment of twelve Higher Education Regional Associations characterised a top-down, state mandated attempt to encourage universities to become more regionally active and engaged. Though these regional associations forced universities to work together on geographically regional parameters, it also encouraged the reimagination of regional definitions and the establishing of a variety of inter-regional collaborations and research consortia (Harrison et al. 2017). Through the 2000s, a third regionalisation process, negotiated via the UK Research Councils and a variety of doctoral training networks, further privileged the importance of research activity, and allowed universities to demonstrate the benefit of their collaboration in such a way to the state (Kitagawa 2009).

There is not a single regional geography, then, when considering the place of universities. The major Higher Education institutions in both the CCR and the WMCA belonging to inter-regional research consortia (Harrison et al. 2017): Cardiff University is part of the Great Western Four (GW4), along with Bath, Bristol and Exeter, while Aston, Birmingham and Warwick Universities are part of Midlands Innovation, a consortium that also includes Leicester,

Loughborough and Nottingham. While it is encouraged to situate universities at the heart of regional analysis (Harrison and Turok 2017), and to consider the importance of universities to their geographical regions as 'anchor institutions' (Goddard et al. 2014), it remains the case that the focus and ambitions of such institutions are often at odds with the needs and demands of their immediate surroundings.

Nevertheless, universities are major employers in their host cities, a major purchaser of goods and services (Glasson 2003), and impact to their local regional economies in a variety of ways (Siegfried et al. 2007). Benefits include flexible part-time student labour, students' monetary contribution to the local economy (Carrascal-Incera et al. 2021b), the attraction and retention of talented staff (Gertler and Vindorot 2005), R&D, knowledge spill overs and the basis for innovation (Goddard et al. 2014). Additionally, universities are expected to provide a direct source of both qualified expenditure and employment, human capital, network relations and participation on regional government and policy (Bonaccorsi 2017), many of which are vitally important when considering the impact on the creative economy.

There is an undeniable link between regional Higher Education provision and the impact of the creative economy (Comunian et al. 2015), with universities' central role as a conduit, bringing potentially high value human capital into a region, and developing a highly skilled labour pool (Faggian and McCann 2006). However, as those institutions are increasingly overloaded with new missions, their regional roles are becoming more complex. The process of declaring regional engagement a 'strategic mission' is not the same as successfully achieving it (Benneworth et al. 2017). The relationship between universities and their regions is complex, multi-faceted and fragile (Bonaccorsi 2017), the impact of research is predicated on the attraction and retention of human capital, and both the WMCA and CCR regions suffer in this regard. Goddard et al. (2018) present a similar view, suggesting that the Civic Mission of the university will always be a secondary consideration for the university itself, no matter how well-intentioned. There are simply too many other pressures and barriers to regional engagement.

3.1 Barriers to Regional Engagement

Several barriers are preventing universities from maximising their role in regional development, such as human capital and the provision of absorptive capacity, as well the tensions and pressures for HEIs in the modern higher education marketplace. There are a variety of perspectives as to why universities fail to engage optimally with their regions, including the preoccupation and necessity to chase global rankings and prestige, in isolation from the society in which they are based (Hazelkorn 2015), the burden of missions on universities being too heavy (Huggins, Jones and Upton

2008), and a source of tension, especially for mid-range universities (Wright et al. 2008). Within this are the inherent tensions within HEI governance, a point salient to the UK, and English universities in particular. Regional engagement in more federal systems, in contrast to the UK's nationalised and centralised governance of both curricula and R&D, seem more able to engage with regional matters concerns, Kenny and Mowery's (2014) exploration of Californian universities is a good example of this.

Although some scholars argue that, in fact, regional considerations should *not* be the interest of a university's mission, and regional industrial engagement is a hinderance to the quality of research (Murray and Stern 2007; Czarnitzki et al. 2009), there is a more substantial literature addressing the elements that are constraining engagement in regional activity, and preventing universities from maximising their economic impact (Hazelkorn 2015; Benneworth et al. 2017; Bonncorsi 2017; Harrison et al. 2017).

Policymakers may fail to understand, not only how complex universities are, but the variety of pressures from both within and outside the institutions that enact upon a university's decision-making processes. Rodriguez-Pose (2013) highlighted a variety of general deficiencies that hinder the implementation of regional innovation involving universities, including the lack of an understanding of regional universities' roles in more globally orientated economies, missing structural governance, misunderstandings of what constitute opportunities to exploit regional knowledge and a lack of collaboration between actors to capitalise on these opportunities.

Often overlooked are just how loosely coupled and fragmented universities are in their leadership hierarchy, and the variety of interests and priorities various levels of institutional management possess (Benneworth et al. 2017; Bonaccorsi 2017). Where senior leadership may be actively engaged in supporting or resisting the use of institutional resources in facilitating regional development, knowledge agents (teacher and researchers) may be more regionally engaged in academic networks and knowledge exchange. Even within a single university, there is not a simple vision or singular rationale for or against regional engagement and the support of regional development. When Rodriguez-Pose (2013) talks about 'collaboration' this includes within disparate aspects of the Higher Education institution, as much as it may be in collaboration with industry and government, both at national and regional level. The expectations of regional business leaders, the pressure to attract students and retain graduates, competes with pressures to perform and thrive in a global education marketplace (Benneworth et al. 2017). Any consideration, therefore, of the role universities can play in supporting creative clusters in their home regions must acknowledge and appreciate the variety and severity of pressures modern universities are faced with, and the implications and potential pitfalls of further adding to that list of responsibilities. It may be the case that HEIs are *not* best placed to offer training provision for their regional creative clusters, and that role may be

better filled by FE colleges and vocational training. FE faces its own set of challenges, suffering from a severe lack of funding, and lack of attractiveness to prospective students in comparison to their HEI competitors. One area that HEIs are already adept at however, is the attraction and nurturing of high talent human capital, and the development of absorptive capacity.

3.2 Human Capital & Absorptive Capacity

Both CCR and WMCA are in prime positions to capitalise on their already well-established creative industries. However, we need a more complete understanding of what the universities in the regions are doing for their respective creative clusters, and what more they could be doing. A key element of universities' roles in their regions is, of course, the people those institutions are able to attract, train and retrain, in the form of 'human capital'; the individual and societal economic benefits of investing in people (Sweetland 1996). The value of human capital in a region is inexorably linked with the ability of that region to accommodate the high-skilled and talented workers that are being produced. Indeed, Qian et al. (2013) argue that the real value of human capital is in building 'absorptive capacity' – originally defined as the ability of a firm to recognise the value of external information, assimilate it, and apply it to commercial ends (Cohen and Levinthal 1990). Getting graduate workers integrated into local businesses and industry is vital to effective knowledge spill over; allowing the production of knowledge from HEIs to be effectively absorbed by the regional economy (Florida et al. 2008; Qian 2010).

The role of universities in building levels of human capital in their regions also relates to the ability to attract – in the form of both undergraduate and postgraduate students as well as staff – practitioners into a region, educating them and providing the region with high-quality human capital. This is especially true within the creative industries, where levels of graduate employment are higher than the national average¹³, and the role universities play in providing creative human capital is often overlooked in research (Comunian and Faggian 2014).

3.3 Skills Gaps & Training in the Creative Industries

Skills gaps and shortages in the CIs are not a new phenomenon, just over a decade ago, Haukka (2011) identified six key issues with the creative workforce, including an over-supply of new entrants, skills mismatches, new entrants struggling to find a first job, lacking skillsets and employers preferring to recruit experienced freelancers from further afield, a practice now made far more difficult by the UK's withdrawal from the EU. Comunian et al. (2015) agree, positing that the expansion of creative Higher Education over the past

¹³ https://graduatemarkettrends.cdn.prismic.io/graduatemarkettrends/8d0f5a43-fe6e-4b78-b710-4c22baa1db5e_what-do-graduates-do-2021-22.pdf

two decades encouraged many more students to study creative subjects, beguiled by relatively low entry requirements, no cap on incoming students and the promise of emancipatory and fulfilling creative careers, resulting in an over-supply of graduates.

Certainly, the geographies of the provision of creative Higher Education courses, and the geographies of creative jobs are not completely aligned (Comunian and Faggian 2014), and there is debate over the extent to whether Creative HE is equipping students with the right skills. Haukka (2011) and Comunian and Faggian (2014) are not alone in suggesting it does not. More recently, Bloom (2020) posits that creative HE can indeed provide graduates with the skills required. Although only 52% of Bloom's survey respondents reported being in some form of 'creative work', 73% claimed the job they were in aligned with the career aspirations. Ashton (2015a) expanded on the discussion of the over-supply of creative graduates, arguing those students from creative courses who find themselves working in 'non-creative' occupations face difficult challenges in attempting to make the transition to creative work, including workforce expectations and intense competition. This is important, when considering the potential of cross-sectoral collaboration; it is not as simple as moving creative graduates to adjacent industries.

As the ubiquity of digital technology has developed over the past decade, there is an increasing assumption on the part of employers across the creative industries that those applying for creative roles will have an attendant suite of software skills (Bakhshi, Djumalieva and Easton 2019). Indeed, Comunian, Faggian and Jewell conclude that:

"...while public policy has tried to promote a broader understanding of the creative industries and their ecology, especially in the role played by technology, graduate skills still are very much structured in silos."

(Comunian, Faggian and Jewell, 2015, p.365)

Creative graduates (CGs) are integral to the creative industries. While only accounting for 17% of the general graduate population, CGs make up 46% of all graduates working in some capacity in the creative and cultural industries (Bloom 2020). However, qualifications alone do not guarantee workforce entry (Haukka 2011), and creative industry-focused courses rarely provide an accurate expectation of what is required in the world of creative work (Guile 2010). The creative industries are paying CGs well in comparison to other sectors, but poorly in comparison to other *graduates* (Bloom 2020). Such a workforce is highly mobile (Bonaccorsi 2017) but motivated by more than just money, creative work is promised to be self-fulfilling and glamorous (Hesmondhalgh 2010b) and the nature of such work is offered as a fundamental reason as to why CGs are prepared put up with precarious, short-term and lower-paid working conditions (Stoyanova and Grugulis 2011; Siebert and Wilson 2013).

Universities play a key role in attracting and retaining talent. Generally, inter-regional mobility is higher for students than for new graduate workers (Carrascal-Incera et al. 2021a). In other words, attracting students supplies the university's home region with talent and human capital more efficient than attracting graduate workers purely through the presence of industry. If the alignment between Creative HE and creative industries is improving, as per the respondents to Bloom's (2020) survey, then such steps in the right direction are a welcome sign, however such progress invites analysis in terms of what can be done to further support creative HE's provision of skills, and their links in supplying their regions with highly skilled human capital. Whether universities want it nor not, they play a key role in the prosperity of their home regions via the supply of human capital and provision of absorptive capacity to local industrial clusters. However, such trends are general, and regional geography is fluid, nuanced and heterogeneous. As a result, the following sections consider the WMCA and CCR regions, specifically.

3.4 Comparing Higher Education in the West Midlands Combined Authority & the Cardiff Capital Region

Primarily, the WMCA benefits from multiple institutions within its three LEP area, including two prominent Russell Group universities in the University of Birmingham and Warwick University (based in Coventry), as well as the presence of Birmingham City University, Aston and Coventry Universities. In addition to Higher Education, there are numerous Further Education colleges, including Warwickshire College, that offer more vocational training. As such, the WMCA is equipped with a wider range of HE/FE support than that of the CCR, as well as the benefit of multiple population centres - Birmingham, Wolverhampton and Coventry - and the presence of the Silicon Spa creative cluster, primarily clustered around the market town of Leamington Spa, offering a higher level of absorptive capacity than the CCR, which is heavily reliant on the City of Cardiff.

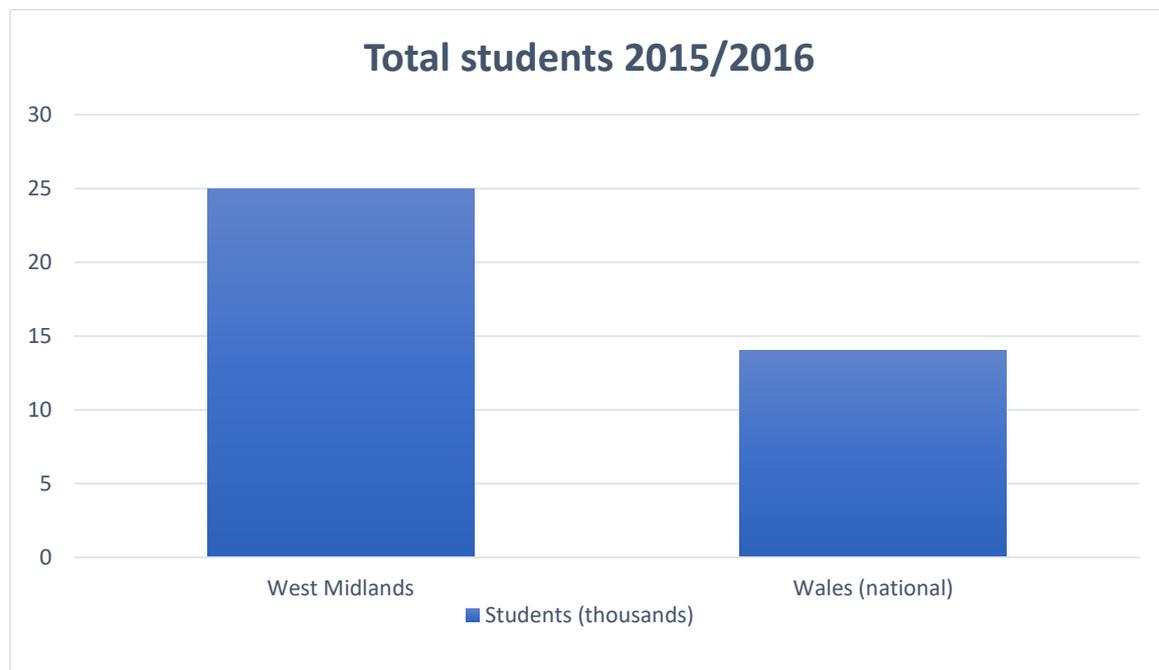
The WMCA must be considered within the wider context of the rest of England, and by extension the UK, particularly in comparison to the CCR. Higher Education in England has been characterised by a binary divide, populated on one side by older, more established research institutions, including the University of Birmingham and the University of Warwick, and post-1992, former polytechnic institutions focused on more vocational education, such as Warwickshire College, Birmingham City University and Coventry University (Morgan 2002; Goddard et al. 2014).

Universities new and old still have an important role to play in contributing to regional economic strategies and, crucially, recovery as we look ahead to an increasingly post-pandemic UK (Carrascal-Incera et al. 2021b). In addition to the complications to trade and recruitment as a result of Brexit, the Shared

Prosperity Fund¹⁴ represents a significant funding shortfall in comparison to previous EU structural funding. There is also the argument the Government's levelling up White Paper under-appreciates the scale of the requirements of the UK's regions post-Brexit and post-COVID (Martin et al. 2021). There are calls for a reduction and reordering of public support for economic development, with a greater focus on localism, raising expectations at the size of the role the universities might play as 'anchor institutions' (Goddard et al. 2014) for their local economies.

This is reflected in the patterns of graduates in the region. Carrascal-Incera et al. (2021a)'s report on general graduate mobility trends suggests the WM region deals with around twice the number of students and graduates than the whole of Wales (Figure 3.1). The West Midlands also does a better job at attracting graduates to its universities from outside the region, keeping just over 1 in 3 graduates in the WM, in comparison to around a quarter of graduates remaining in Wales (Figure 3.2). However, both the West and East Midlands are still classified as areas of 'brain drain' (Carrascal-Incera et al. 2021a), an attractor of students but exporter of new graduate workers. The WMCA is still losing creative graduates to creative and digital sectors in London and the South-East, but also performs poorly in comparison to Wales (national) in *retaining* students and graduates in the West Midlands (Figure 3.3).

Figure 3.1: Total Students 2015/2016



¹⁴ <https://www.gov.uk/government/publications/uk-shared-prosperity-fund-prospectus/uk-shared-prosperity-fund-prospectus>

Figure 3.2: *Student and Graduate Attraction*

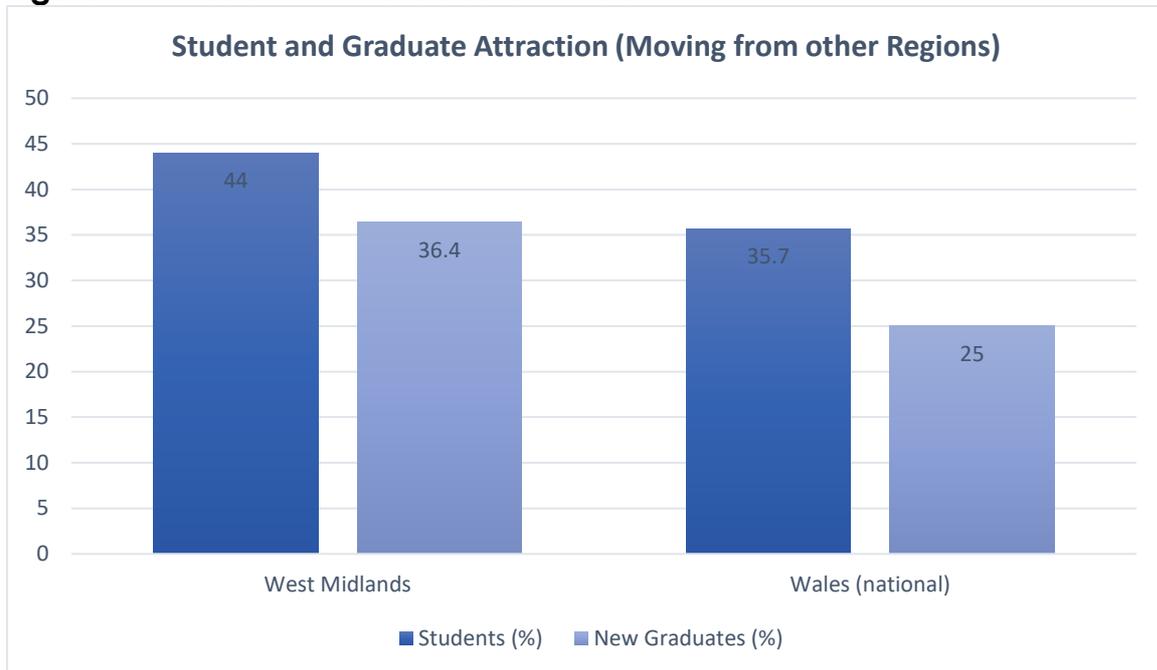
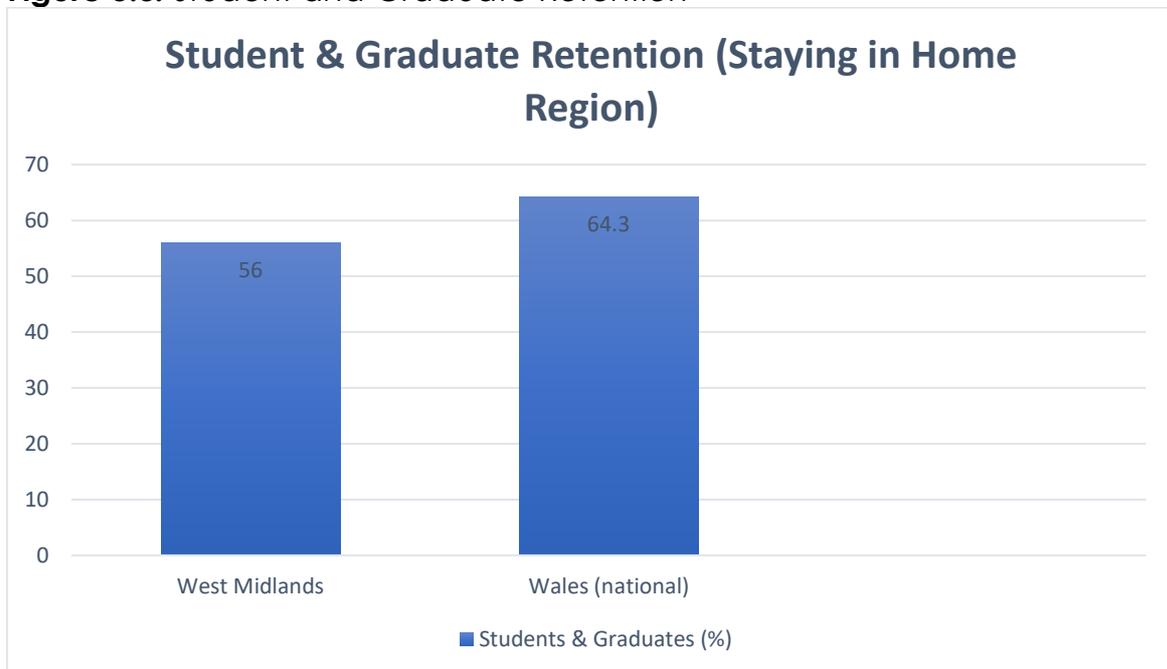


Figure 3.3: *Student and Graduate Retention*



Source: Carasscal-Incera et al. 2021.

We cannot consider the WMCA and CCR regions, and their respective creative clusters, without also considering the differing nature of film and tv sectors, and video games production. Though there is a degree of ambivalence with regards to the suitability of HE courses in preparing workers

for television production (Allen and Hollingworth 2013; Bridgstock and Cunningham 2016), there are links between specialised games development courses at HEIs and industry clustering (Mateos-Garcia et al. 2018). As such, the HEIs operating within the WMCA offer a variety of courses, with the intention of developing future generations of game designers. Coventry University offers two courses, a BA in Games Art and a BSc in Games Technology, Birmingham City University have the Gamer Camp, offering two-year fast-track courses on games development, access to PlayStation 4 development kits and operating in collaboration with Sony and Microsoft on projects in the past, as well as partnerships with major Silicon Spa entities, Codemasters and Playground Games (BOP 2017). Additionally, FE colleges such as Warwickshire College offer a 2-year foundational course in game design.

However, there are reasons for concern. Evidence of the 'fit' between courses and employers' expectations is mixed, with reports suggesting as few as 12% graduates find work within the sector within 6 months (BOP 2017). Similarly to TV and Film, there is a shortage of experienced talent in video games, and high levels of talent exchange between firms. This is in spite of the provision of specialised HEI courses above, as well as good industry provision of training, BOP (2017) has reported that 80% of video game firms in the UK are investing in training, and the average studio providing 14 days of inhouse training, double the average of other industries. As a result, it suggests that more can be done to optimise the links between the West Midlands' HE infrastructure, and its leading creative clusters.

When considering the interactions between the Cardiff Capital Region, its indigenous HEIs and its creative clusters, three main issues emerge. Firstly, as a part of the partially devolved nation of Wales, within the UK, there are constraints and levels of complexities in addition to those experienced by English regions, and the WMCA for the purposes of this comparison. Second, Wales' status as a more peripheral region presents its own set of considerations and challenges, as will be explored. Thirdly, the economic geography of the Cardiff Capital Region centres predominantly around the city of Cardiff, and as such the HEI distributions follow the same trend.

Though there are numerous HEIs within the CCR, the biggest importers of students are the three main Universities; Cardiff Metropolitan University, The University of South Wales (which also has sites at Pontypridd and Newport) and chiefly, Russell Group member Cardiff University, which includes the School of Journalism, Media and Culture (JOMECA). This section begins by highlighting the impact of partial devolution on regional development in Wales, and considering Wales as a peripheral region (Pugh 2017) and the challenges that poses in attracting universities and graduates.

Any consideration of the Welsh higher education landscape and its history with higher education policy has to acknowledge the country's status as a

partially devolved nation within the wider UK, and the extra level of complexity that this adds (Goddard, Hazelkorn, Upton and Boland 2018). Partial devolution has meant that Welsh universities are consciously steered by the rest of UK's higher educational policy, as well as global competition, and constrained by centralised decisions on the allocation of funding (Reid 2018). There are also a combination of organisations undertaking governance, regulation and performance reviewing for Welsh Universities, including the Office for Students, The Commission for Tertiary Education and Research (CTER) and the Welsh Research and Innovation London Office (WRILO). Although some are Welsh in origin, many others originate in the broader English infrastructure (Goddard et al. 2018). Morgan concluded that, without the autonomy and agency granted by devolved political parties, the ability to develop 'Welsh solutions for Welsh problems' will always be limited (Morgan 2002, p.65). Among those problems, is the nature of South-East Wales as a peripheral region in the UK (Pugh 2017).

In 2015, Comunian et al. identified Cardiff as possessing a higher number of creative graduates than creative occupations, suggesting that it was a region lacking in the capacity to retain the graduates entering the creative workforces they are training for, either as a result of a weak regional creative economy, or due to mismatches between occupations and training infrastructure. More recently, Carrascal-Incera et al. (2021a) characterised the whole of Wales, along with Scotland, Northern Ireland and the North West of England, as areas of 'low mobility', in terms of the graduates; showing higher than average retention of graduates from within its region, but failing to attract both students and graduates from elsewhere.

Wales lags behind the region of the West Midlands on a national level, in terms of total graduates as well as in terms of attraction rates across the whole economy (Carrascal-Incera et al. 2021a). Goddard et al. (2018) offered a slightly different picture, suggesting Wales is a net importer of students, but net exporter of graduates. The city of Cardiff itself benefits from a higher proportion of the population educated to degree level than Birmingham, as illustrated in section 2.1. However, there are still issues with the provision of skills, including skills mismatches, motivating and mobilising the rural population surrounding Cardiff, and ensuring local talent is sufficiently skilled to work in High-End Television; the source of greatest employment, and profile to attract further interest and further economic growth. Overall, South-East Wales is characterised as a region, with the notable exception of Cardiff, that is being 'left behind' (Martin et al. 2021). The implications for the CCR as a peripheral region return to the relationship between human capital, skills and graduate absorptive capacity.

Wales, nationally, has a human capital problem, the proportion of the Welsh population with graduate qualifications is below the UK average, and many graduates feel it necessary to leave Wales after completing their studies (Goddard et al. 2018). In doing so, industry in the region is being deprived of

skilled workers in all sectors, negatively impacting the capacity of firms and organisations in the CCR to be able to successfully push innovation and economic growth. Cooperation with the region's universities requires this level of absorptive capacity, if the business sector of a peripheral region doesn't possess it, then the demand for collaboration with the university is that much lower (Bonaccorsi 2017). Wales has been highlighted as a region that may suffer such deficiencies (Huggins and Kitagawa 2012; Pugh 2017), and at least partially shaped by Welsh Higher Education Policy. Traditionally, Welsh HE policy has been premised on a model attempting to push innovation out from universities, and into business, relying on universities to drive innovation and economic growth (Pugh 2017). Pugh argues that, instead, peripheral regions such as Wales should focus their universities' attentions on building up the capacity of businesses in their vicinity to better absorb both the human capital produced in the form of graduating students, but also the knowledge and innovation generated by research.

3.5 Conclusion

Universities are increasingly being recognised as having a role to play in supporting their local creative industries ecosystems. Universities support their creative economies by upskilling the local population and attracting creative workers. However, there are some key challenges with how well HEIs can achieve the objectives placed upon them. Firstly, whether universities are overloaded with competing objectives. Secondly, there is argument as to whether HEIs are *nimble* enough to provide the skills most in demand by creative industries in their region. Thirdly, there is a question about whether the host regions have the necessary capacity to absorb creative graduates. The WMCA benefits from a bigger population, multiple major population centres and a wider variety of HEIs than the CCR, which is reflected both in its attraction, and retention, of students and graduates (Carrascal-Incera et al. 2021a). Does the WMCA's increased size translate into a greater level of absorptive capacity, and a more attractive proposition for students and graduates? The creative industries have historically had an uneasy relationship with HE (Allen and Hollingworth 2013), and an unclear link between entry-level jobs in television (runners, apprenticeships and work experience placements) and HEI provision of media courses (Ashton 2015b; Davies 2021), as well as concerns over the 'readiness' of graduates when they arrive in the creative world of work, shared across both TV (Tomlinson 2012), and video games production (Livingston and Hope 2011; Comunian, Faggian and Jewell 2015).

Television and video games increasingly share many of the same skills requirements, as 'Createch' (Bakhshi, Djumalieva and Easton 2019) skills requirements in job adverts across the creative industries indicate an increasing assumption, on the part of employers, that graduates will have these skillsets. Skills shortages are causing serious issues across the creative industries, prompting the question; how well-placed are regional universities

providing their creative industries with high-skill talent? In doing so, it is impossible to ignore that both regions require the collaboration of industry, education and government, and so the nature of policy interventions, and the status of the CCR as existing within the partially devolved nation of Wales, must be also considered.

4. The Creative Industries in Regional & National Policy

A consideration of the place of Higher Education in enhancing the contribution of creative industries to the WMCA and CCR regions in 2022 is a timely one, coming shortly after the UK Government has unveiled the Levelling up White Paper¹⁵ (LUWP), a major overhaul of British regional and economic policy that promises to place greater emphasis on the 'forgotten places' of the UK. This final section addresses each of the policy landscapes of both the West Midlands and South-East Wales, how they impact upon digital and creative industries, and the place of Higher Education. It begins with an overview of policy challenges at a macro level, before considering regional level, and finally policy related to education, skills and training.

4.1 Levelling Up & the Creative Industries

The LUWP is part of a major policy initiative aimed at reducing regional inequalities across the UK, based on twelve missions. Table 4.1, below, offers an overview of the variety of ways arts and culture, and creative and digital industries can contribute to the 12 core missions of the levelling up agenda. Domestic investment for R&D is promised to be increased by 'at least 40%' for regions including the North, Midlands, South-West, Scotland, Wales and Northern Ireland. Additionally, The West Midlands is one of the three 'innovation accelerators', set to benefit from £100m of 'new funding' to turbocharge local growth, citing the MIT/Boston and Stanford/Silicon Valley clusters as examples. However, the evidence suggests that co-evolution between excellent research and industrial specialisation such as in California (Kenney and Mowery 2014) is very uncommon, even exceptional (Lundvall 2002), and extremely difficult to replicate (Sternberg 1996; Bonaccorsi 2017), such an approach should perhaps be undertaken with caution. £100m is also a modest amount of funding to enable such growth. In addition to being an 'innovation accelerator, the West Midlands is also earmarked for one a few 'trailblazer' devolution deals, aiming to replicate the mayoral regional autonomy present within London in other major population centres in England.

¹⁵https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1052046/Executive_Summary.pdf

Table 4.1: *The contribution of arts, culture and creative industries to levelling up*

Levelling Up Mission	Role of Creative and Culture
1. By 2030, pay, employment and productivity will have risen in every area of the UK, with each containing a globally competitive city, with the gap between the top performing and other areas closing.	Some sub-sectors of the creative industries are associated with high levels of GVA and emergent evidence suggests that they can drive innovation and increased productivity in other sectors. This mission can target the creative clusters in the CCR and the WMCA due to their potential to drive productivity uplift.
2. By 2030, domestic public investment in Research & Development outside the Greater South-East will increase by at least 40% and at least one third over the Spending Review period, with that additional government funding seeking to leverage at least twice as much private sector investment over the long term to stimulate innovation and productivity growth.	CCIs role in R&D is a key area for development, Creative and Digital sectors are drivers of innovation and growth. Additionally, creative clusters such as those in Leamington Spa and Cardiff Bay, offer a high density of highly-skilled firms and individuals, with huge potential for spill-over to adjacent sectors.
3. By 2030, local public transport connectivity across the country will be significantly closer to the standards of London, with improved services, simpler fares and integrated ticketing.	Improved connectivity is key for connecting people to creative industries jobs. Poor connectivity is a barrier to growth in WM and CCR creative industries. The more people that can access creative jobs the larger the labour pool for employers and the greater the associated benefits of agglomeration.
4. By 2030, the UK will have nationwide gigabit-capable broadband and 4G coverage, with 5G coverage for the majority of the population.	Digital connectivity offers the same benefits as 3, above, and is vital for the growth of digital sectors, and any sector employing 'Createch' skills.
5. By 2030, the number of primary school children achieving the expected standard in reading, writing and maths will have significantly increased. In England, this will mean 90% of children will achieve the expected standard, and the percentage of children meeting the expected standard in the worst performing areas will have increased by over a third.	Role of CCIs in education is multi-faceted, including children participating in music activities such as learning a musical instrument is recognised to deliver wide ranging benefits from educational attainment to self-confidence (Savage & Barnard, 2019).
6. By 2030, the number of people successfully completing high-quality skills training will have significantly increased in every area of the UK. In England, this will lead to 200,000 more people successfully completing high-quality skills training annually, driven by 80,000 more people completing courses in the lowest skilled areas.	Opportunity to fill skills gaps in the creative industries is a key concern, and an area in which HEIs can make a major contribution.
7. By 2030, the gap in Healthy Life Expectancy (HLE) between local areas where it is highest and lowest will have narrowed, and by 2035 HLE will rise by 5 years.	CCIs role in improving health and well-being is well cited, Arts have been found to promote healthy aging, improve life for dementia sufferers (Young et al., 2016), reduce loneliness and improve self-confidence and self-efficacy.
8. By 2030, well-being will have improved in every area of the UK, with the gap between top performing and other areas closing.	
9. By 2030, pride in place, such as people's satisfaction with their town centre and engagement in local culture and community, will have risen in every area of the UK, with the gap between the top performing and other areas closing.	Culture is heavily linked to pride in place, arts and culture have an important role in establishing creative places which in turn may attract creative workers (Florida, 2002).
10. By 2030, renters will have a secure path to ownership with the number of first-time buyers increasing in all areas; and the government's ambition is for the number of non-decent rented homes to have fallen by 50%, with the biggest improvements in the lowest performing areas.	
11. By 2030, homicide, serious violence, and neighbourhood crime will have fallen, focused on the worst-affected areas.	Arts and culture have been linked to crime reduction and rehabilitation, Research has found that the arts can have a contribution to the criminal justice system allowing offenders to find a more positive identity (Henley, 2015).
12. By 2030, every part of England that wants one will have a devolution deal with powers at or approaching the highest level of devolution and a simplified, long-term funding settlement.	

4.2 Regional Policy

The UK Government places significant value on the export potential of creative services from IT, Gaming and Film and TV, and the CIs are instant exporters as well as a key element of the Government's previous Industrial Strategy, and DCMS has pledged £50m to ensure digital and creative industries remain internationally competitive, ahead of an ambitious creative industries sector vision, expected in summer 2022¹⁶. The following section will look at how policy at the regional level operates. In addition, the place of education policy must also be considered, in order to fully understand the role that universities, and the rest of post-compulsory education can or could play in maximising the potential of the creative clusters already present in the WMCA and CCR regions.

The West Midlands is targeting an ambitious £7bn increase in GVA from the region's Creative Sector by 2031, from its 'internationally competitive digital industries' (West Midlands Digital Roadmap 2021). Crucially however, interest extends beyond the creative industries themselves, but also the application of creative and digital skills sets in jobs outside the creative industries, to drive innovation in aerospace, automation healthcare and new media, through collaboration with the likes of Jaguar Land Rover (West Midlands Local Industrial Strategy 2018).

In Wales, devolution of some powers, notably Arts, Culture and Sport, as well as education and training, mean that some aspects of creative policy may diverge from UK policy as directed by the DCMS. The Welsh Assembly Government has signed a concordat establishing an agreed framework for co-operation¹⁷. The most relevant policy body for creative industries is Creative Wales; a Welsh Government agency established in 2020 with the objectives of "driving growth across the creative industries"¹⁸, and "developing new talent and skills". The sub-sectors of focus for Creative Wales are Film & TV, Music, Games, Createch, Animation, R&D and Publishing (note some divergence from the DCMS defined sub-sectors in Appendix A1). To achieve these goals, Creative Wales has a modest capital budget allocation from Welsh Government of £5 million per year¹⁹.

¹⁶ <https://www.gov.uk/government/news/50-million-of-government-investment-announced-for-creative-businesses-across-the-uk>

¹⁷ DCMS and Welsh Assembly Government Concordat:
<https://gov.wales/sites/default/files/publications/2018-09/concordat-with-culture-media-and-sport.pdf>

¹⁸ <https://www.creative.wales/>

¹⁹ Welsh Government Draft budget 2022-23:
<https://gov.wales/sites/default/files/publications/2021-12/2022-2023-draft-budget-narrative.pdf.pdf>

Creative policy interventions from Creative Wales focus on funding support, and efforts to address skills shortages through education and training²⁰. Projects to this end focus primarily on the Film & TV sector, and examples include CRIW (a production apprenticeship programme), a National Film and Television School, and a Creative Skills Body, amongst other initiatives. There are links throughout Creative Wales' skills initiatives to the wider Welsh Government agenda, such as the Young Persons Guarantee²¹. Funding is another key area of policy for Creative Wales with initiatives prioritizing content production, including Film & TV, but also Animation and Games.

The role of universities in supporting and informing creative policy in Wales is exemplified by the successful bids of Clwstwr Creadigol and Media Cymru. Clwstwr is part of the UK Government's Creative Clusters Programme; an £80 million programme aiming to drive innovation and skills across nine creative clusters. The successful Clwstwr bid was led by Creative Cardiff, a Cardiff University department founded in 2015, and supported by the three universities in the CCR; Cardiff University, University of South Wales and Cardiff Metropolitan University. Subsequently in 2021, Cardiff University led the successful Media Cymru bid; a £50 million programme with specific goals to raise £236 million in GVA in the CCR's media sector.

The CCR identifies the Creative Economy as a key sector of Interest, along with Cyber-Security, AI, transport and engineering as it looks to further the growth of Wales' GVA. Like the WMCA, the future of regional economic growth is centred around the promise in emerging sectors heavily dependent on digital technology, Createch skills and the potential to benefit from cross-sectoral collaboration with Creative skillsets. The CCR prioritises a focus on productivity, entrepreneurship, skills and exports to combat Wales' GVA problem. Creative industries have much to offer in the way of skills, as mentioned above.

4.3 Education & Training

Universities can play a variety of key roles in driving creative industries' growth. The West Midlands boasts an extremely competitive array of post-compulsory education options. In addition to the elite research-intensive Russell Group institutions University of Birmingham and Warwick University, and Aston University, Birmingham City University is a huge supplier of creative graduates, nationally, and Coventry University offers a wide variety of creative and digital specialisations, with the Serious Games Institute, Centre for Disruptive Media and National Institute of Coding all based in the city. The aim, therefore, is to support and build on what is already in existence, and strengthen links with local creative clusters to ensure high-level talent is

²⁰ <https://www.creative.wales/skills-and-talent>

²¹ The Young Persons Guarantee commits to giving everyone under the age of 25 the opportunity to be in education, training or work.

retained. There are a number of incentives and pressures on universities and other post-compulsory education providers to become more engaged in their immediate vicinities, but universities are also under constant pressure to compete in a tightly contested global marketplace and accrue global prestige.

Skills funding was a central component of the West Midlands Industrial Strategy (2018), which included £69m of funding for the West Midlands Regional Skills Plan (2018), with the intention of developing digital and technical skills, alongside boosting job opportunities and productivity in the WMCA. That £69m of investment will include adult retraining schemes, equipment for local colleges, provision of apprenticeships (a valuable entryway to creative occupations), as well as providing careers advice for young people, and online portals for the region to learn more about local job opportunities. The Industrial Strategy explicitly links the Regional Skills Plan to capitalising on the potential of the Leamington Spa creative cluster, and so provides a good example of the importance of creative and digital industries to the regional economy, and an initiative to help ensure continued growth and expansion.

It is possible that talent pathways into IT, digital and software development are better well-established and supported by HE/FE, in comparison to the Film and TV sector. At a Westminster Forum Event in January 2022, Sarah Joyce from nationwide training provider for the Film and Television industry ScreenSkills illustrated some of the distinct challenges facing Film and TV production in the UK's regions, with regards to training. Specifically, there is an increasing reticence to train in the UK's creative regional clusters, through a fear of not only losing talent to sectoral competitors, and to better paid work *outside* the creative industries (Bloom 2020), but also *geographically*, in talent drain to the creative industries powerhouse of London and the South East of England. In addition, industry spend on training is small relative to production spend. In the financial year 2020/21, Joyce highlighted that Screenskills' income allocated to training provision was only £11.6m, in comparison to an approximate £5bn spend on production the same period. It would appear that the TV and film industries must do more to assist in providing for its own industry, and Sir Ian Diamond, in his 2016 review of education funding in Wales, echoed the same sentiment (Welsh Government 2016).

For Wales, and the CCR, there is the added complexity provided by devolution, an ongoing negotiation of autonomy with the aim of finding tailored problems for Wales, rather than being pulled in certain directions by Westminster. The Reid Report (2018) also identified a number of current 'hotspots' for industry/HE collaboration, including the creative sector with Cardiff University, Cardiff Metropolitan University and the University of South Wales. Among these 'hot spots', Cardiff's various universities offer existing collaboration in the development of compound semi-conductors, automotive sectors, aerospace and life sciences, in addition to its support for

the CIs themselves. It is a stronger integration of these sectors that will facilitate the cross-sectoral collaboration that the CCR wants. With devolution of autonomy and power to regions being a central tenet of the Levelling up, these concerns are now applicable to WMCA as well, and increasing competition for funding and scarcity of resources threatened by the Shared Prosperity Fund mean that collaboration and integration are more important than ever.

A key element in matching Welsh education policy with the needs of the Welsh population is to lower a variety of the barriers to entry to HE. The Diamond Report's (Welsh Government 2016) recommendations are aimed at increasing inclusivity and opening up higher education to more of the Welsh population, higher vocational and technical education developing through partnerships with colleges, universities and other training providers. The provision of more apprenticeships, as well as employee-sponsored provision, could be pursued to adhere to the mantra of 'earn while you learn.' Diamond also highlights that the pivotal role of employers in vocational training should not be overstated, and linked to the issues illustrated by ScreenSkills with regards to UK funding for TV and Film training provision covered above, this role is a financial one, as well as a collaborative and knowledge exchange exercise.

The Levelling up agenda is extremely ambitious, yet light on the details of funding, and has been the subject of criticism and cynicism. It nonetheless offers a *real* opportunity to refocus economic growth in the UK around all of its regions, beyond London and the South-East. The West Midlands and South-East Wales face a number of challenges in mobilising and upskilling their local populations, and improving digital and physical infrastructure. The WMCA is tasked with linking multiple clusters and population centres together, and CCR in linking the rest of the region to Cardiff. Though both possess well-established creative and digital clusters, offering a great deal of potential to both their own industries, and the application of creative and digital skills in other sectors, they must be supported. Where universities fit into the Levelling up agenda is not entirely clear, but they remain central elements of their regions' ecosystems, and can play a key role in ensuring those regions can recover from this period of unprecedented economic threat in an optimum fashion. Doing so, however, will require a better understanding of the challenges faced, at regional and sectoral level, and the collaboration of HE, FE and all areas of the education system, as well as industry and government, at all levels.

4.4 Conclusions & Future Research

This report has shown that both the WMCA and CCR have creative clusters that are poised to deliver a raft of economic and social benefits to their regions. Additionally, the creative industries have been recognised in policy, at all levels, as a source of innovation and growth. In this report we have

identified where the creative industries can act as a mechanism to achieve many of the missions of the current UK Government's Levelling up agenda. However, the report has demonstrated that, despite this potential and support in policy, there are several areas that need addressing if the creative clusters in the WMCA and CCR are to be supported. HEIs have a role in boosting their local creative clusters, yet our analysis shows there are key questions that need to be answered. How well are the universities in the WMCA and CCR providing the appropriate skills for their native creative industries? What factors are influencing how well each region are retaining their creative graduates?

With the devolution of autonomy so centrally important to the Levelling up agenda, particularly with the West Midlands earmarked as one of the beneficiaries of the Innovation Accelerators, a comparison with the CCR offers an opportunity to understand, does devolution help or hinder regional institutions?

While policy is supportive of the continued growth of the creative industries, there remain some inconsistencies. Firstly, though the creative sector has been a key element of British economic policy for the last two decades (McRobbie 2002; Garnham 2005), it has suffered from an uneasy relationship with HE, lacking in the confidence of HE/FE provision of appropriate and up-to-date skillsets, a phenomenon only set to be accelerated by the ongoing digital revolution and the increasing requirement for Createch skills. Secondly, the realities of Brexit, and the shock of the Covid-19 pandemic have had a profound impact on the creative sectors, and with the Shared Prosperity Fund and Levelling up agendas expecting recovery while tightening the purse strings even further, the process of optimisation becomes all the more important. Therefore, to see successful creative clusters we need to better understand three key areas of interaction between policy, HEIs and regional creative clusters:

- Mapping Skills Gaps: There are skills gaps present in each regions creative cluster which are having a significant impact on the growth of creative industries sectors. However, there is little data on what skills are missing at the regional and sub-sectoral levels.
- Recent Policy Developments: The impact of funding, from COVID relief, Brexit & Shared Prosperity Fund shortfalls or Levelling Up discretionary funding decisions on HEIs will have had a significant impact on regional creative clusters. There needs to be a greater understanding of the consequences of these changes for creative industries firms.
- The Role of HEIs and other Institutions: The report highlights that HEIs play multiple roles in supporting the national and local economy. HEIs in their role of skills providers could play a significant role in closing skills gaps. However, there is some debate about the effectiveness of this approach in the creative industries.

Universities are expected to play many roles within their regions, including being attractors of skilled personnel, hubs of innovation and R&D spill over, anchor institutions and globally competitive centres of educational excellence. There is a valid argument to consider that universities are being pulled in too many directions. With that said, other aspects of post-compulsory education, particularly FE and vocational training colleges, are also able to contribute, and further research is needed to explore the skills gaps that threatening the creative clusters in both regions, but also the funding and structural limitations on FE ecosystems that limit their contribution.

The nature of creative employment, freelance, short-term and often in small or micro-businesses, and even as supplementary work alongside a main income (Ball et al. 2010) makes it extremely difficult to gain an accurate picture of the state of play. Can these skills gaps be mapped? More information is needed on what, specifically, can be achieved through a collaboration of HE/FE and colleges and industry, to help close these gaps and ensure both the WMCA and CCR and their creative industries are adequately supported. Additionally, more qualitative work is needed to better understand the drivers of talent attraction and retention in both regions.

It is also vital to gain the perspectives from stakeholders across government, industry and education in both regions to create a more holistic picture of what is needed, answering Comunian et al.'s call for:

“...further qualitative research... to depict detailed talent attraction and retention processes that allow us to reaffirm the importance of creative HE for nurturing city creativity.”
(Comunian et al. 2015, p.379)

In addressing the questions highlighted above, the subsequent aspects of this research will seek the perspectives of stakeholders from government, HE and creative employers in both regions, as well as extensive mapping and modelling of the skills profiles of both populations to better understand the specific needs of the WMCA and CCR's creative and digital clusters, and how their HEIs may be better placed to help contribute to continued growth as the UK emerges from an unprecedented series of challenges.

References

- Allen, K. and Hollingworth, S. 2013. 'Sticky Subjects' or 'Cosmopolitan Creatives'? Social class, Place and Urban Young People's Aspirations for Work in the Knowledge Economy. *Urban Studies* 50(3), pp.499-517.
- Ashton, D. 2015a. Creative work careers: pathways and portfolios for the creative economy. *Journal of Education and Work* 28(4), pp.388-406.
- Ashton, D. 2015b. Making Media Workers: Contesting Film and Television Industry Career Pathways, *Television and New Media* 16(3), pp.275-294.
- Bakhshi, H. and McVittie, E. 2009. Creative supply-chain linkages and innovation: Do the creative industries stimulate business innovation in the wider economy? *Innovation* 11(2), pp.169-189.
- Bakhshi, H., Djumalieva, J. and Easton, E. 2019. *The Creative Digital Skills Revolution*. PEC: NESTA.
- Bakhshi, H. and Spilsbury, M. 2019. *The Migrant and Skills Needs of Creative Businesses in the United Kingdom*. London: NESTA
- Bakhshi, H. and Lomas, E. 2017. *Defining R&D for the creative industries*. London: NESTA.
- Ball L., Pollard E. and Stanley N. 2010. *Creative Graduates Creative Futures*. London: Institute for Employment Studies.
- Benneworth, P., Pinheiro, R. and Karlsen, J. 2017. Strategic Agency and institutional change: investigating the role of universities in regional innovation systems (RISs). *Regional Studies* 51(2), pp.235-248.
- Bloom, M. 2020. *For Love or Money? Graduate motivations and the economic returns of creative higher education inside and outside the creative industries*. Creative Industries Policy and Evidence Centre: NESTA
- Bonaccorsi, A. 2017. Addressing the disenchantment: universities and regional development in peripheral regions. *Journal of Economic Policy Reform* 20(4), pp.293-320.
- BOP Consulting. 2017. *Games Industry in Coventry & Warwickshire: A Blueprint for Growth*.

Bridgstock, R. and Cunningham, S. 2016. Creative labour and graduate outcomes: implications for higher education and cultural policy, *International Journal of Cultural Policy* 22(1), pp.10-26.

Brien, P. 2021. *The UK Shared Prosperity Fund*. House of Commons Library. Available at: <https://researchbriefings.files.parliament.uk/documents/CBP-8527/CBP-8527.pdf>

Bryan, J., Hill, S., Munday, M. and Roberts, A. 2000. Assessing the role of the arts and cultural industries in a local economy. *Environment and Planning A*,32(8), pp.1391-1408.

Carrascal-Incera, A., Green, A., Kollydas, K. and Taylor, A. 2021a. Regional Brain drain and gain in the UK: Regional patterns of graduate retention and attraction. UKRI, Research England.

Carrascal-Incera, A., Kitsos, A. and Gutierrez Posada, D. 2021b. Universities, students and regional economies, a symbiotic relationship? *Regional Studies*, DOI: 10.1080/00343404.2021.1925236

Carey, H. O' Brien, D. Gable, O., 2021. Screened out Tackling class inequality in the UK Screen Industries. *Creative Industries Policy & Evidence Centre*. Available at: <https://cdn2.assets-servd.host/creative-pec/production/assets/publications/PEC-and-ScreenSkills-report-Screened-Out-FINAL-April-2021.pdf>

Chapain, C., Cooke, P., De Propriis, L., MacNeill, S. and Mateos-Garcia, J. 2010. *Creative clusters and innovation. Putting creativity on the map*. London: NESTA.

Chapain, C. and Sagot-Duvaouroux, D. 2020. Cultural and creative clusters – a systematic literature review and a renewed research agenda. *Urban Research and Practice* 13(3), pp.300-329.

Cohen, W.M. and Levinthal, D.A. 1990. Absorptive capacity: A new perspective on learning and innovation. *Administrative science quarterly* 35(1), pp.128-152.

Commission for Tertiary Education and Research. 2021. *Tertiary Education and Research (Wales) Bill*. Available at: <https://senedd.wales/media/yhmdm14y/pri-ld14625-e.pdf>

Comunian, R. and Faggian, A. 2014. Creative graduates and creative cities: exploring the geography of creative education in the UK. *International journal of cultural and creative industries* 1(2), pp.19-34.

Comunian, R., Gilmore, A. and Jacobi, S. 2015. Higher Education and the Creative Economy: Creative Graduates, Knowledge Transfer and Regional Impact Debates. *Geography Compass* 9(7), pp.371-383.

Comunian, R., Faggian, A. and Jewell, S. 2015. Digital technology and creative arts career patterns in the UK creative economy. *Journal of Education and Work* 28(4), pp.346-368

Cunningham, S. 2011. Developments in measuring the creative workforce. *Cultural Trends* 20(1), pp.25-40.

Czarnitzki, D., Glänzel, W. and Hussinger, K. 2009. Heterogeneity of Patenting Activity and Its Implications for Scientific Research. *Research Policy* 38(1), pp.26–34.

Davies, J.R. 2021. Serendipity and the Silver Screen: Career Entryways and Worker Experiences in UK Television. PhD Thesis; Cardiff University.

DCMS, 1998. *Creative Industries Mapping Document*. Available at: <https://www.gov.uk/government/publications/creative-industries-mapping-documents-1998>

DCMS, 2016a. *Creative Industries Economic Estimates - January 2016*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/523024/Creative_Industries_Economic_Estimates_January_2016_Updated_201605.pdf

DCMS 2020. The Impact of Covid-19 on DCMS Sectors. First Report. Available at: <https://committees.parliament.uk/publications/2022/documents/19516/default/>

De Propris, L. 2013. How are creative industries weathering the crisis? *Cambridge Journal of Regions, Economy and Society* 6(1), pp.23-35.
Faggian A. and McCann P. 2006. Human capital flows and regional knowledge assets: a simultaneous equation approach. *Oxford Economic Papers* 58(3), pp.475-500.

Ffilm Cymru. 2020. *Equality, Diversity and Inclusion Action Plan 2018-22*. Available at: <https://ffilmcymruwales.com/sites/default/files/2021-03/EDI%20Action%20Plan%202021%20ENG%20web.pdf>

Flew, T. and Cunningham, S. 2010. Creative industries after the first decade of debate. *The information society* 26(2), pp.113-123.

Florida, R. 2002. *The rise of the creative class: And how it's transforming work, leisure, community and everyday life*. New York, NY: Basic Books.

Florida, R., Mellander, C. and Stolarick, K. 2008. Inside the black box of regional development: human capital, the creative class and tolerance. *Journal of Economic Geography*, 8, pp.615–649.

Garnham, N. 2005. From Cultural to Creative Industries: An analysis of the implications of the creative industries approach to arts and media policy making in the United Kingdom. *International Journal of Cultural Policy* 11(1), pp.15-29.

Gertler, M. S. and Vinodrai, T. 2005. Anchors of creativity: how do public universities create competitive and cohesive communities? In F. Iacobucci and C. Tuohy (eds). *Taking Public Universities Seriously*, pp.293–315. Toronto: University of Toronto Press.

Glasson, J. 2003. The widening local and regional development impacts of the modern universities - a tale of two cities (and north-south perspectives), *Local Economy*, 18, pp.21–37.

Goddard, J., Hazelkorn, E., Upton, S. and Boland, T. 2018. Maximising universities' civic contribution: a policy paper.

Goddard, J., Coombes, M., Kempton, L. and Vallance, P. 2014. Universities as anchor institutions in cities in a turbulent funding environment: vulnerable institutions and vulnerable places in England. *Cambridge Journal of Regions, Economy and Society* 7, pp.307-235.

Gutierrez-Posada, D., Kitsos, T., Nathan, M. and Nuccio, M. 2021. *Do creative industries generate multiplier effects? Evidence from UK cities, 1997-2018*. Available at: <https://www.pec.ac.uk/assets/publications/Do-Creative-Industries-Generate-Multiplier-Effects-Evidence-from-UK-cities-1997-2018-PEC-Discussion-Paper-July-2021-1.pdf>

Harrison, J. and Turok, I. 2017. Universities, knowledge and regional development. *Regional Studies* 51(7), pp.977-981

Harrison, J., Smith, D.P. and Kinton, C. 2017. Relational regions 'in the making': Institutionalising new regional geographies of higher education. *Regional Studies* 51(7), pp.1020-1034.

Haukka, S. 2011. Education-to-work transitions of aspiring creatives. *Cultural trends*, 20(1), pp.41-64.

Hazelkorn, E. 2015. *Rankings and the reshaping of higher education: The battle for world-class excellence*. London: Palgrave Macmillan.

Hazelkorn, E. 2016. Towards 2030: A framework for building a world-class post-compulsory education system for Wales.

Henley, J. 2015. Musical learning and desistance from crime: the case of a 'Good Vibrations' Javanese gamelan project with young offenders. *Music education research*, 17(1), pp.103-120.

Hesmondhalgh, D. 2010b. User-generated content, free labour and the cultural industries, *Ephemera* 10(3-4), pp.267-284.

HM Treasury. 2021. *Autumn Budget and Spending Review*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1043688/Budget_AB2021_Print.pdf

Howkins, J. 2001. *The Creative Economy*. London: Penguin.

Huggins, R., Jones, M. and Upton, S. 2008. Universities as Drivers of Knowledge-based Regional Development: A Triple Helix Analysis of Wales. *International Journal of Innovation and Regional Development* 1(1): 24–47.

Huggins, R. and Kitagawa, F. 2012. Regional Policy and University Knowledge Transfer: Perspectives from Devolved Regions in the UK. *Regional Studies* 46(6), pp.817–832.

Innocenti, N. and Lazzeretti, L. 2019. Growth in regions, knowledge bases and relatedness: some insights from the Italian case. *European Planning Studies*, 27(10), pp.2034-2048.

Kenney, M. and Mowery, D.C. (eds). 2014. *Public Universities and Regional Growth. Insights from the University of California*. Stanford: Stanford University Press.

Kitagawa, F. 2009. Creating critical mass of research excellence in the region: The case of Scottish research pooling initiatives. *European Planning Studies* 17, pp.487–495.

Lee, N. and Clarke, S. 2017. Who gains from high-tech growth? High-technology multipliers, employment and wages in Britain. *High-Technology Multipliers, Employment and Wages in Britain (July 19, 2017)*. SWPS, 14.

Livingston I. and Hope A. 2011. Next-Gen. Transforming the UK into the World's Leading Talent Hub for The Video Games and Visual Effects Industries. A Review. London: NESTA.

Lundvall, B.A. 2002. *The University in the Learning Economy*. DRUID Working Paper No. 02-06.

Lyons, M S B. 2022. Creative Accounting? Assessing the Economic Impact of the Creative Industries: An Input-Output Approach for the Cardiff City-Region. PhD thesis, Cardiff University.

Martin, R., Gardiner, B., Pike, A., Sunley, P. and Tyler, P. 2021. Levelling up Left Behind Places: The Scale and Nature of the Economic and Policy Challenge. Routledge.

Mateos-Garcia, J., Bakhshi, H. and Lenel, M. 2014. *A Map of the UK Games Industry*. NESTA/UKIE.

McRobbie, A. 2002. Clubs to Companies: Notes on the Decline of Political Culture in Speeded up Creative Worlds. *Cultural Studies* 16(4), pp.516- 531.
Miège, B. 1987. The logics at work in the new cultural industries. *Media, Culture & Society* 9(3), pp.273-289.

Morgan, B. 2002. Higher Education and Regional Economic Development in Wales: An Opportunity for Demonstrating the Efficacy of Devolution in Economic Development. *Regional Studies* 36(1), pp.65-73.

Murray, F. and Stern, S. 2007. Do Formal Intellectual Property Rights Hinder the Free Flow of Scientific Knowledge? An Empirical Test of the Anti-commons Hypothesis. *Journal of Economic Behavior and Organization* 63, pp.648–687.

Mateos-Garcia, J., Klinger, J. and Stathoulopoulos, K. 2018. Creative nation: How the creative industries are powering the UK's nations and regions.

O'Connor, J. 2010. *The cultural and creative industries: a literature review*. 2nd Edition ed. Newcastle: Creativity, Culture and Education.

ONS. 2021. *Subregional productivity: labour productivity indices by city region*. Available at:
<https://www.ons.gov.uk/economy/economicoutputandproductivity/productivitymeasures/datasets/subregionalproductivitylabourproductivitygvaperhourworkedandgvaperfilledjobindicesbycityregion>

Pratt, A.C. 2013. Space and place. In *Handbook on the Digital Creative Economy*. Edward Elgar Publishing.

Pugh, R. 2017. Universities and economic development in lagging regions: 'triple-helix' policy in Wales. *Regional Studies* 51(7), pp.982-993.

Qian, H., Acs, Z.J. and Stough R.R. 2013. Regional systems of entrepreneurship: the nexus of human capital, knowledge and new firm formation. *Journal of Economic Geography* 13, pp.559-587.

Raines, K. 2021. *Identity, Confidence, Connection: Rethinking audience engagement for arts & culture in the West Midlands*. Indigo Ltd.

Reid, G. 2018. *Review of government funded research and innovation in Wales*. Welsh Government. Available at: <https://www.hefcw.ac.uk/wp-content/uploads/2020/08/reid-review-en.pdf>

Rodríguez-Pose, A. 2013. Do institutions matter for regional development? *Regional Studies*, 47(7), pp.1034–1047.

Savage, J. and Barnard, D. 2019. *The state of play: A review of music education in England 2019*. *The Musicians' Union*.

Siebert, S. and Wilson, F. 2013. All work and no pay: consequences of unpaid work in the creative industries. *Work, Employment and Society* 27(4), pp.711-721.

Siegfried, J.J., Sanderson, A.R. and McHenry, P. 2007. The economic impact of colleges and universities. *Economics of Education Review*, 26, pp.546–558.

Sternberg, R. 1996. Reasons for the Genesis of High-tech Regions. Theoretical Explanation and Empirical Evidence. *Geoforum* 27(2), pp.205–223.

Stoyanova, D. and Grugulis, I. 2011. *Tournament Careers: Working in UK Television*. In: Mathieu, C. (ed). 2011. *Careers in Creative Industries*. London: Routledge.

Sweetland, S.R. 1996. Human capital theory: Foundations of a field of inquiry. *Review of educational research*, 66(3), pp.341-359.

Tomlinson, M. 2012. Graduate employability: a review of conceptual and empirical themes. *Higher education policy*, 25(4), pp. 407– 431. 10.1057/hep.2011.26

Trade and Cooperation Agreement. 2020. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/982648/TS_8.2021_UK_EU_EAEC_Trade_and_Cooperation_Agreement.pdf

UK Government. 2017. *Higher Education and Research Act*. Available at: <https://www.legislation.gov.uk/ukpga/2017/29/contents/enacted?view=plain>

UK Government. 2018. *Industrial Strategy: The Creative Industries Sector Deal*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/695097/creative-industries-sector-deal-print.pdf

UK Government. 2019. *West Midlands Local Industrial Strategy*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/802091/west-midlands-local-industrial-strategy-single-page.pdf

UK Government. 2022a. *Levelling Up the United Kingdom*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1052706/Levelling_Up_WP_HRES.pdf

UK Government 2022b. *Shared Prosperity Fund: prospectus*. Available at: <https://www.gov.uk/government/publications/uk-shared-prosperity-fund-prospectus/uk-shared-prosperity-fund-prospectus>

Welsh Government. 2016. Review of higher education funding and student finance arrangements in Wales. Final Report.

Welsh Government. 2017. *Future Trends Report*. Available at: <https://gov.wales/sites/default/files/statistics-and-research/2018-12/170505-future-trends-report-2017-en.pdf>

WMCA. 2018. *West Midlands Regional Skills Plan*. Available at: <https://www.wmca.org.uk/media/2267/regional-skills-plan.pdf>

WMCA. 2021. *West Midlands Digital Roadmap*. Available at: <https://www.wmca.org.uk/media/4468/west-midlands-digital-roadmap.pdf>

Wright, M., Clarysse, B., Lockett, A. and Knockaert, M. 2008. Mid-range Universities' Linkages with Industry: Knowledge Types and the Role of Intermediaries. *Research Policy*, 37, pp.1205–1223.

Young, R., Camic, P.M. and Tischler, V. 2016. The impact of community-based arts and health interventions on cognition in people with dementia: A systematic literature review. *Aging & mental health*, 20(4), pp.337-351.

Acknowledgements

Dr. Anastasios Kitsos contributed to the formulation and organisation of this report.

Appendices

Appendix A1: The creative industries SIC codes (2007) DCMS defined.

Creative Industry	Standard Industrial Classification Code Description
Advertising and marketing	70.21 Public relations and communication activities 73.11 Advertising agencies 73.12 Media representation
Architecture	71.11 Architectural activities
Crafts	32.12 Manufacture of jewellery and related articles
Design: product, graphic and fashion design	74.10 Specialised design activities
Film, TV, video, radio and photography	59.11 Motion picture, video and television programme production activities 59.12 Motion picture, video and television programme post-production 59.13 Motion picture, video and television programme distribution 59.14 Motion picture projection activities 60.10 Radio broadcasting 60.20 Television programming and broadcasting activities 74.20 Photographic activities
IT, software and computer services	58.21 Publishing of computer games 58.29 Other software publishing 62.01 Computer programming activities 62.02 Computer consultancy activities
Publishing	58.11 Book publishing 58.12 Publishing of directories and mailing lists 58.13 Publishing of newspapers 58.14 Publishing of journals and periodicals 58.19 Other publishing activities 74.30 Translation and interpretation activities

Museums, galleries and libraries	91.01 Library and archive activities 91.02 Museum activities
Music, performing and visual arts	59.20 Sound recording and music publishing activities 85.52 Cultural education 90.01 Performing arts 90.02 Support activities to performing arts 90.03 Artistic creation 90.04 Operation of arts facilities

Appendix A2: Creative industries vs the Cultural Sector SIC codes (2007)

SIC07	Description	Creative Industries	Cultural Sector
1820	Reproduction of recorded media		*
3212	Manufacture of jewellery and related articles	*	*
3220	Manufacture of musical instruments		*
4763	Retail sale of music and video recordings in specialised stores		*
5811	Book publishing	*	
5812	Publishing of directories and mailing lists	*	
5813	Publishing of newspapers	*	
5814	Publishing of journals and periodicals	*	
5819	Other publishing activities	*	
5821	Publishing of computer games	*	
5829	Other software publishing	*	
5911	Motion picture, video and television programme production	*	*
5912	Motion picture, video and television programme post-production	*	*
5913	Motion picture, video and television programme distribution	*	*
5914	Motion picture projection activities	*	*
5920	Sound recording and music publishing activities	*	*
6010	Radio broadcasting	*	*
6020	Television programming and broadcasting activities	*	*
6201	Computer programming activities	*	
6202	Computer consultancy activities	*	
7021	Public relations and communication activities	*	
7111	Architectural activities	*	
7311	Advertising agencies	*	
7312	Media representation	*	
7410	Specialised design activities	*	
7420	Photographic activities	*	*
7430	Translation and interpretation activities	*	
8552	Cultural education	*	*
9001	Performing arts	*	*
9002	Support activities to performing arts	*	*
9003	Artistic creation	*	*
9004	Operation of arts facilities	*	*
9101	Library and archive activities	*	*
9102	Museum activities	*	*
9103	Operation of historical sites and buildings and visitor attractions		*

