Coast to Capital

Metro Dynamics

Understanding an innovation ecosystem

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Introduction

Metro Dynamics was commissioned in June 2019 by Coast to Capital LEP to analyse the innovation ecosystem in the LEP area.

In the modern economy, innovation is the lifeblood of productivity growth. The invention of new products and the developments in commercialisation of new processes, allows businesses and organisations to grow, attracting investment from all over the world. Unfortunately, creating innovation is less straightforward than understanding the need for it. It is less a question of resources, and more a question of environment: establishing the places where people can share ideas and creating the urban centres in which people want to live, study and work. Through this develops the ecosystem which allows innovation to materialise and grow.

The places which understand and nurture innovation have much to gain. Though it has rich assets, understanding the innovation ecosystem in Coast to Capital is a challenge. The LEP suspected that there was no one innovation hotspot and instead quite distinct local environments, each with their own regional and national reach. The purpose of this analysis has been to understand where these networks are forming in Coast to Capital, where they are not, and the reasons behind it.

The report will be published in two parts. Part One provides a deep-dive analysis of the Coast to Capital economy, examining economic indicators, the problem of place and innovation metrics. The analysis covers specialist sector strengths and economic complexity; it investigates the disparity across the three primary economic areas; and it dissects the current state of the innovation ecosystem. The report defines the current strengths of and challenges to the economy, supported by data and by conclusions drawn from our engagement of local businesses and universities. Case studies are used throughout to draw attention to places where innovation is thriving or have developed strong innovation bases. These case studies identify the components and institutions required for a successful innovation ecosystem.

Part Two of the report will be published shortly thereafter, and will take the conclusions drawn from the data analysis and local engagement, to conceptualise an approach to the challenges facing the LEP. Those challenges include the skills shortage within Coast to Capital; the lack of 'grow on' space for businesses; and the importance of place, identity and culture. Coast to Capital has a complex and dynamic economy, which will inform the shape of our approach when developing key recommendations to tackle these challenges.

Our approach

We have followed a four-stage approach to understand the state of innovation in the Coast to Capital economy. We began with a review of Coast to Capital's existing material, and our own data analysis. We analysed key economic data and innovation metrics, to understand what sectors local companies are innovating in and how this is changing over time. This included examining data on R&D tax credits claimed by local companies, the distribution of various innovation funding streams (such as UKRI funding, Innovate UK projects) and looking at national patents office data.

We have also produced an economic complexity analysis. Complexity is closely linked to prosperity and can help gauge an economy's resilience and sub-sector specialisms. This provides insight into which subsectors the economy could most effectively move into by building upon existing strengths. We have studied the spread of more economically complex industries in the wider LEP area, to understand the interconnections between the different sub areas. As our starting point, the three sub areas we investigated are: Brighton, the Gatwick Diamond and the London Gatwick Corridor.

For the second stage of the work we researched and wrote case studies of places with high-functioning innovation ecosystems, and places in the process of building them. We have looked especially at the role of education institutions in this process, to understand the importance they play in creating a well-functioning innovation ecosystem.

For stage three, we conducted 22 interviews with key innovators from businesses and education institutions across the LEP area, giving us a broad overview of activity. As data analysis can only tell us so much, to really understand local conditions, we spoke to the people that work here. The results of this consultation forms a key part of the analysis within this report.

Finally, we have developed a range of possible policy options to explore in workshops with LEP colleagues and the stakeholders engaged in our consultation sessions. These have been both data gathering and analytical exercises, but also represent the creation of an innovation and knowledge leadership group, who will help develop and push through the ideas which emerge from this report.

The Importance of Innovation

Innovation is a vital determinant of long-term economic prosperity. Globalisation has increased the pressures of competition; to thrive, businesses and institutions need to continually develop new processes and products.

Innovation – the application of new, novel and useful ideas to business products and processes – occurs when individual components work within institutional contexts to build new relationships and capabilities. It requires the deepening of existing capabilities, technological or social within an organisation, and constitutes the commercial exploitation of this.

The innovation associated with the creation of new, valuable commodities or services, lies behind productivity growth. Advances in production processes increase the value of output per worker, which makes the business or institution which achieve it, more competitive.

Innovation is driven by a number of factors, but people and environment are key. People drive innovation by providing human capital, innovative thoughts and ideas, network connections to other firms and industries and by contributing to firms' general cultures. This makes investments in human capital, for instance education and lifelong learning, essential.

Place is also key. Innovation does not just happen within individual businesses: the places they are based act as both the sites where innovation happens and as the driver in its creation. These places also benefit from innovation by growing faster, whether in output, employment or the development of their physical infrastructure place. As for the places where innovation happens, it is self-perpetuating. As a place gains a reputation for innovativeness, agglomerative forces influence other companies to locate nearby and benefit from knowledge spillovers. Such agglomeration breeds further innovation and further business clustering.

It is this which makes the ability to attract innovative people and organisations important to places today. Many young entrepreneurs are increasingly drawn to living in city centres. Their changing tastes provide a challenge to places outside of city centres, which will need to reinvent themselves and their 'offers' to remain attractive. People will often make decisions about where to move based on the availability of relevant and attractive jobs. This means that developing attractive business infrastructure (transportation, facilities, financial incentives) can also encourage people to co-locate and then drive innovation. Places, like Brighton, the Gatwick Diamond and Gatwick-London Corridor, must think creatively and ambitiously to develop their innovation ecosystems and harness the benefits of innovation.

Innovative Places - Case Studies

Many places around the world are renowned as hubs of innovation, where new ideas are developed more often than others, and turned to the benefit of the local economy. Many of these are home to technological giants, universities and research institutions, though some are not. Other places with less successful or innovative reputations have recognised the potential to strengthen their local economies by facilitating innovation. Initiatives or new institutions in these places have sought to draw in new business, retain young and innovative workers as well as foster resilience by preparing for future changes to their economies. All, however, show great interaction with organisations of different sizes and sectors, collaborating across their institutional boundaries to mutual benefit.

We have analysed two types of case studies in order to understand how innovation has developed within different economies and places, with a focus on the influence of universities and specialist institutes. We have evaluated areas that are renown for innovation, like Cambridge and Manchester, establishing the drivers behind these ecosystems. Secondly, we have looked at how places have used innovation to address a growing problem in their city or

economy, such as a lack of skills, the outmigration of young people or the departure of key businesses.

These case studies provide a base understanding of what it means to have a successful innovation ecosystem. It presents the challenges that many places are facing, including Coast to Capital, and the approaches in which cities have successfully utilised universities and innovation to ensure success of their local economy.

Places with thriving innovation ecosystems

Cambridge's route to becoming Europe's number one innovation ecosystem

Over the last half century, Cambridge has grown to become Europe's leading innovation ecosystem. Cambridge has the highest number of patent applications of any city in the UK, a high business start-up rate and one of the highest productivity rates in the country.
Despite resistance from senior academics, from the 1950s researchers from the University of Cambridge's engineering, physics and computing departments started to consider collaborations with industry. The turning point was the establishment of Cambridge Science Park in 1970. Funded by Trinity College, this was intended to be a place where businesses and academics could interact, sharing the findings from their research and exploring commercial potential. By the end of the 1970s, there were 25 companies on the site. Today, the park is bursting at its boundaries, home to over 100 companies and developing a new Bio-Innovation Centre. Apple, Microsoft, Google, IBM have made bases in the area, and most recently AstraZeneca made Cambridge its global headquarters, anxious to access the life sciences innovations coming out of the city.

Cambridge's success as an innovation centre lies in its network. Large businesses interact with the university's researchers and start-ups, through the 'Cambridge Angels,' a group of supportive, specialist tech investors. It is this which facilitates the accidental discoveries which become valuable inventions. Businesses from around the world uproot their offices to Cambridge to access this environment, and it is the first-place large companies look to in the UK for new research, filling the city with high growth industries and highly skilled workers. Around 57,000 people are employed by more than 1,500 technology-based firms in the area, which have combined annual revenue of over £13 billion.

Eindhoven's collaborative approach to innovation has made it one of Europe's smartest cities

When the decline of its longstanding industries in the 1990s threatened its economy, Eindhoven, the Netherlands' fifth largest city, turned to innovation to drive economic growth. Forging a 'triple helix' partnership between government, higher education and business, the city established institutions focused on technological development.

Eindhoven's economy had always been tied to the performance of its largest company, Philips. When an economic recession in the early 1990s forced the company to transfer its manufacturing base from Eindhoven to China and its HQ to Amsterdam, the city's leaders collaborated to build sites where collaborative research between businesses and higher education institutions could take place.

These included Brainport Development, focusing on creating a productive environment for businesses to grow and change. Local government, higher education and industry, pooled their resources to finance Brainport, which works with the research campuses in the region to form

specific clusters to encourage innovation and the development of research for commercial gain. The centres encourage businesses to collaborate on projects and share the successes.

The Technical Campus Eindhoven is now home to 185 companies and institutes, including IBM, Intel and Shimano, and the campus belonging to the Technical University of Eindhoven has a track record of finding commercial applications for academic research. This innovation has helped to change the city. The most recent data from 2012 shows that Eindhoven region had the third highest number of high-tech patents per member of the population in Europe, and the fourth highest overall. Design and creativity have emerged as new strengths and the economy is no longer reliant on a few large companies.

By backing science and innovation, Manchester's civic leaders are turning its scientific specialisms into prosperity

Manchester has reversed industrial design by realising the innovation potential of its academic institutions. Manchester's civic leaders reached out to its higher education institutions to discover how to make the transition to becoming a modern knowledge-based economy. Today, the city is undergoing a renaissance, and is ranked as one of the most innovative economies in the country.

By the early 2000s, following the collapse of its traditional industries in the 1970s and 1980s, Manchester's economy had shrunk dramatically. Between 1971 and 1981, Manchester lost almost 50,000 full-time jobs and 17.5 per cent of its population. Despite this, the strength of its university and the quality of the research endured the struggles, and Manchester remained a popular student city.

Recognising this, in the early 2000s civic leaders began talking to university staff about possible collaborations. This approach culminated with the Manchester Science and Innovation Audit, an economic analysis of Manchester's scientific and technological strengths. Looking across the universities and the wider economy, it served as a blueprint for the commercial development of the city.

City and University leaders used this to push a radical agenda, using scientific expertise for the benefit of the local economy. They opened the National Graphene Institute in 2015, a research hub to focus on the further advancement of graphene technology. Manchester Science Park was also established, opening new campuses across the conurbation based on other strengths identified in the audit, now home to over 300 businesses. Manchester is now recognised as a science and innovation hub. In 2018, it was ranked the third most innovative cluster in the country, after London and Birmingham.

Places attempting to create new innovation ecosystems – their approach and the role of having or recently acquiring a new Higher Education presence

MK:U – Milton Keynes new university establishes the city as a key digital innovation hub in the UK

Milton Keynes is working to foster an innovative reputation with the establishment of its two new education initiatives. While Milton Keynes is one of the fastest growing cities in Europe and the 8th most active city in the UK for innovation, it struggles to attract and retain the young talent pool required by local firms. One of the causes of this mismatch, is the face that Milton Keynes is the largest city in the UK without a university. The establishment of two local higher education institutions should help the city to overcome its shortcomings and promote future innovativeness.

MK:U will be a STEM-based university that emphasises the placement of students with local businesses. Meanwhile, the Institute of Digital Technology will offer technical apprenticeships. With the efforts of these two institutions, over 10,000 students will gain access to and experience with the skills necessary to address current and future business needs in the area. In order to make the most of these developments, Milton Keynes will have to invest in the development of affordable housing in order to ensure that students' needs are met, and that the city centre is an attractive and attainable place to live and work post-graduation.

Hereford's New Model in Technology and Engineering (NMITE)

The New Model in Technology Engineering (NMiTE) was developed in Herefordshire to respond to the outmigration of young people and address the county's lack of a local university. NMiTE, located within the Skylon Park to partner students with local organisations, has built relationships with Bristol and Warwick University, alongside employers Heineken and QinetiQ, in order to serve its status as a specialist institution with a new educational model.

NMiTE emphasises engineering in conjunction with local business work experience, to develop a workforce that will increase the innovative and economic capacity of the economy by staying in the area. This initiative should effectively drive the development of new high skill and high wage jobs while serving economic growth and contributing to a new innovation hub. In order for NMiTE to meet its potential, Herefordshire will have to invest in complementary projects. People are increasingly drawn to living in appealing city centres, and businesses will typically only choose to relocate where there are strong infrastructure and transportation facilities. By investing in place alongside the development of human capital and an innovative institutional environment, Herefordshire could effectively use innovation to generate economic capacity.

Finland's 'innovation university' is breaking subject boundaries to prepare its students for the digital economy

A further example of a place outside the UK fostering local innovation in order to drive new economic development, is Finland's Aalto University. This new endeavour resulted from the merging of Helsinki's technology, art and design school with its economics school. Aalto's innovative education model intends to prepare students for the modern, digital economy. Students gain real-world experiences, attributed to the collaboration with local businesses that offer practical projects and problems, whilst the businesses themselves benefit from innovative techniques and solutions. The institution draws businesses and skilled workers to Finland, leveraging agglomeration and knowledge spillover effects.

The national innovation university has now existed for over 10 years and is steadily rising in rankings. However, Aalto has not yet been able to attract a great deal of foreign students, despite many course offerings in English. Finland also continues to experience the departure of many young people as they pursue higher education and skilled employment in other parts of Europe and abroad. Brain drain is a national problem for Finland and will require interventions in sectors other than just education, but Aalto is one piece of the puzzle, helping prepare the country to remain innovative in a changing economy.

Sheffield's lab-for-hire has put the city on the map for high-tech manufacturing

Sheffield's Advanced Manufacturing Research Centre offers the city-region a 'lab for hire', enabling businesses to work with University of Sheffield academics to develop new products. It developed from the University of Sheffield approaching a local tool-making firm for a collaboration in the 1990s, to the research centre it is today, collaborating with over 100 companies on R&D projects.

By working with businesses across the UK addressing challenging research problems, the Centre is helping the region garner a reputation as a centre for advanced manufacturing and innovation. Businesses that work with the Centre benefit from reduced costs of R&D, as well as mitigated risk on new and innovative offerings. This local approach is drawing high-tech businesses to the region, helping to offset the detrimental effects that deindustrialisation had on Sheffield.

The collaborative approach employed in Sheffield has helped bring skilled jobs to the area and has directly provided local people with skilled work via its apprenticeship scheme. The Centre has not, however, offered a significant amount of direct employment opportunities. Its ability to do so has been undercut by the fact that clients of the Centre can collaborate remotely, so the innovation sparked by Sheffield University academics does not always directly impact the region. Another obstacle preventing direct effects from reaching local firms is the high rental costs on the Advanced Manufacturing Park. While the Centre sparks innovation, it does not function as an incubator to foster new entries or innovative but high-risk enterprises.

Description and Analysis

Coast to Capital covers a vast area, stretching from Epsom down to Brighton and encompassing large parts of East Surrey and West Sussex. It is an extremely diverse place, comprising 12 local authority districts, agricultural land, thriving urban centres, coastal towns and industrial areas.

The sheer size and diversity of the LEP area makes it very difficult to define. We have analysed economic metrics and consulted various businesses that work in the area to understand the economy, the relationships between place, and, specifically, the innovative activities of businesses and researcher institutions in the area.

The Coast to Capital Economy

At face value, Coast to Capital has a large and successful economy, home to high value industries and large, international, innovative businesses. 1.5 million people live in the Coast to Capital LEP area, and, with an economy worth over £42 billion, it is the 10th largest LEP area in the country.[1] Coast to Capital is also a very productive economy, with a GVA per hour worked of £35.20, 4.8% higher than the UK value (£33.60).[2] It is home to many large multinational businesses, many leaders in their fields, such as AMEX, Thales and Virgin.

The Coast to Capital economy is specialised in high value sectors

Coast to Capital has business specialisms in a range of high value sectors, which tend to be highly productive and innovative.

We used a Location Quotient (LQ) analysis to understand specialisation patterns in the sectors in the local economy. In this context, specialisation refers to the concentration of a specific industry in the local economy relative to the country as whole.

LQs are ratios for each sector between the local share of employment and the share of employment in Great Britain (GB). GB is assigned an LQ of 1.0 and the local economy is compared against this. Higher LQs correspond to higher levels of specialisation. An LQ above 1.0 indicates that the area is more specialised in that sector than GB as a whole.

This analysis allows us to understand the sectors and sub-sectors that the local economy has a distinctive strength in. It is a key piece of analysis, as building on existing sectoral strengths is likely to increase the chances of economic success.

Table 1 is the result of our LQ analysis, ranking the SIC2 sub-sectors by their LQ values. For further explanation of SIC codes and specialisms, please see the Appendix.

[1] ONS National Population Survey, Population estimates - local authority based by single year of age, 2018; Balanced Gross Value Added (GVA(B)) for Combined Authorities, City Regions and other economic and enterprise regions of the UK (GVA is in chained volume measures in 2016 pounds).

[2] Metro Dynamics analysis of ONS BRES and Regional GVA (Balanced) (2017).

Table 1: High Value Sector Specialisms, 2017

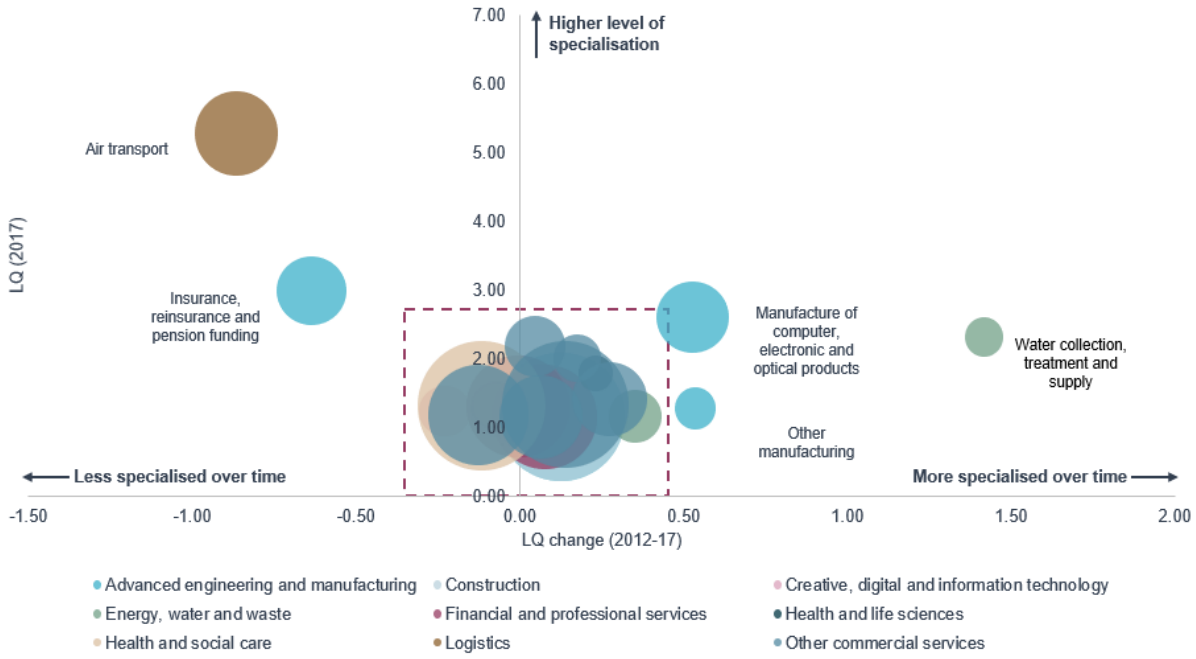
SIC2	sub-sector	Location Quotient	Jobs
1	Air transport	5.28	9,500
2	Insurance, reinsurance and pension funding	2.99	6,500
3	Manufacture of computer, electronic and optical products	2.60	7,000
4	Water collection, treatment and supply	2.31	2,000
5	Travel agency, tour operator and other reservation services	2.18	5,000
6	Veterinary activities	2.00	3,000
7	Manufacture of basic pharmaceutical products and pharmaceutical preparations	1.78	1,625
8	Activities of membership organisations	1.41	7,500
9	Services to buildings and landscape activities	1.33	21,500
10	Creative, arts and entertainment activities	1.32	3,000
11	Residential care activities	1.31	22,000
12	Activities auxiliary to finance and insurance	1.30	14,000
13	Other manufacturing	1.27	2,250
14	Electricity, gas, steam and air conditioning supply	1.26	4,000
15	Publishing activities	1.24	3,500
16	Sports, amusement and recreation activities	1.18	13,500
17	Waste collection, treatment and disposal activities; materials recovery	1.16	3,750
18	Other personal service activities	1.15	9,500
19	Specialised construction activities	1.15	22,000
20	Real estate	1.14	14,500

Strengths in advanced manufacturing, creative and digital, and financial and professional services

The results show that Coast to Capital is specialised in a range of advanced and high value sectors: advanced engineering and manufacturing; creative, digital and information technology; financial and professional services; and health and life sciences. [Table 1; Figure 1].

With companies such as Bowers and Wilkins, GP Acoustics, Vindex Systems, Ricardo, Thales and Elekta in the area, Coast to Capital has a specialisation in advanced manufacturing and electronics. The LQ analysis shows that the Manufacture of computer, electronic and optical products is the most specialised advanced engineering and manufacturing sub-sector – over twice as specialised in Coast to Capital than GB. It has a high number of jobs (7,000) and is an important source of employment in the economy. Other manufacturing has 2,250 jobs and an LQ of 1.27. This is most likely based on the manufacture of medical and dental instruments and supplies, which has an LQ of 1.44 and 1,250 jobs.

Figure 1: Top 20 SIC2 sub-sectors by LQ for Coast to Capital (excluding Croydon and Lewes) (>1,000 jobs) (2017)



There is also a high specialism in the creative industries – Coast to Capital is recognised as a centre of the video games industry, for instance. Creative arts and entertainment activities has an LQ of 1.32 and 3,000 jobs. Publishing activities has a slightly higher number of jobs (3,500), but a lower LQ of 1.24. Companies in this sector include Creative Assembly, Brandwatch, Dotmailer, You At Work, Bunyand and The Focus Group.

Coast to Capital has long been recognised as a hub for financial professional services, home to large financial service firms including American Express, OCS, RSA and Zurich. There are three financial and professional services sectors in the top 20 most specialised sub-sectors, providing 35,000 jobs. With 6,500 jobs, insurance, reinsurance and pension funding is almost three times as specialised in Coast to Capital than GB. Activities auxiliary to finance and insurance have an LQ of 1.30 and 14,000 jobs. Real estate is becoming more specialised over time, currently with 14,500 jobs in real estate and an LQ of 1.14.

Alongside these, Coast to Capital is specialised in the manufacture of basic pharmaceutical products and preparations. It has 1,625 jobs, an LQ of 1.78, benefitting from the presence of

several large pharmaceutical companies in the Coast to Capital area – GSK, Novo Nordisk and CSL Behring.

Aside from these core specialisms, Coast to Capital has a number of other specialised sub-sectors relating to construction; energy, water and waste; health and social care; and a range of other commercial services. The most specialised sub-sector, over five times as specialised as GB, is air transport, supplying 9,500 jobs. This reflects the importance of Gatwick Airport to the economy, a hub which has attracted companies like Virgin Atlantic and Norwegian Air.

Coast to Capital is one of the UK's most complex economies

Economic complexity analysis is designed to help us understand how much productive knowledge is contained within the economy. Knowledge is central to economic development and growth. It is the basis for innovation, and those goods and services which require greater knowledge in their production tend to be more valuable.

However, the capacity of individual human beings to store knowledge is no greater than it has ever been. Instead, our economy responds to the need to store greater knowledge by becoming more complex. Consider the production of a computer. This requires knowledge about microchips, liquid crystal displays, electronics, and the moulding of plastics, among other things. No one individual, or even company, possesses all of this knowledge. Instead, a complex web of relationships between businesses grows up to enable greater levels of social knowledge, that is knowledge which is shared among the population as a whole. Less developed economies, which focus on primary industries, do not exhibit such a depth of networks, as the production of more basic goods does not require them.

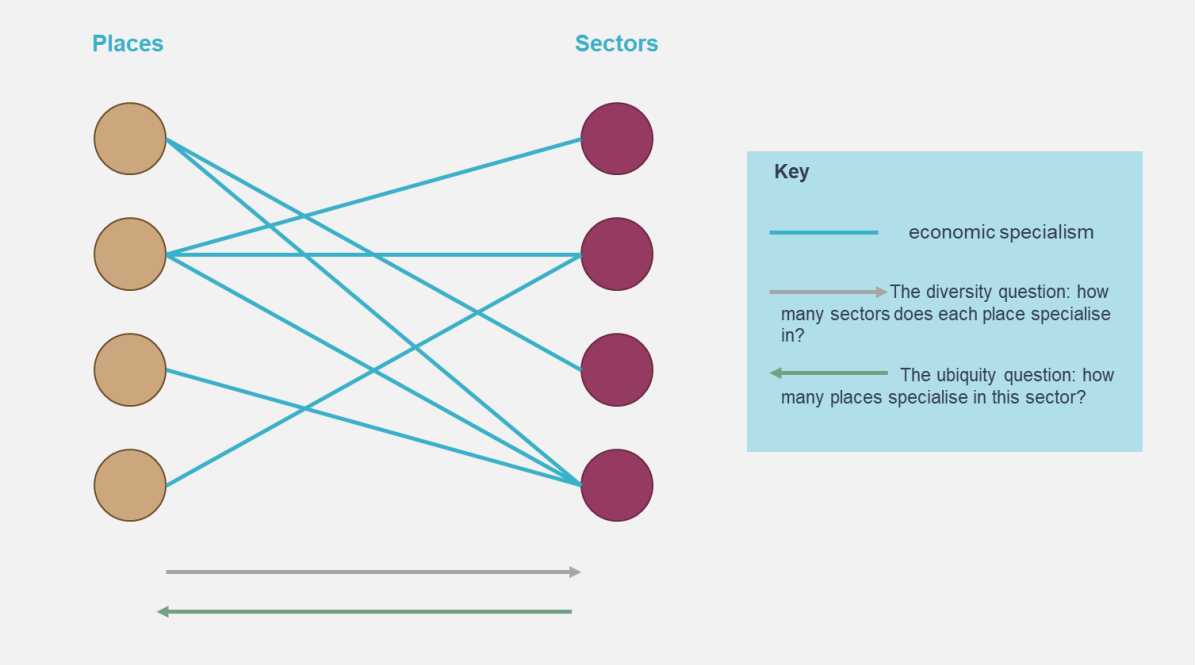
Because knowledge is intangible and invisible, we can instead look to measure the complexity of an economy to get a sense of the knowledge it contains. The Economic Complexity Index (ECI) is a cutting-edge measure, developed only in the last couple of years to do this.

The ECI works by analysing a matrix of economic specialisms – by connecting places to the products they specialise in as nodes in a network [figure 2]. Specialisms are defined as when a place has a Location Quotient (LQ) greater than 1 – i.e. a higher proportion of its employment is in a certain industry, compared to the national average, therefore within the local economy, that sector is more specialised than the GB average.

The workings of the ECI can be thought of as an iterative process. It firstly asks, for each place, how many specialisms it has. Economies which contain more knowledge will generally be able to do more things. But then we have to ask: how specialist are those activities? For example, the City of London and the local authority district of South Holland (in Lincolnshire) both have 41 sub-sectors in which they specialise. However, the City of London specialises in sectors in which not many local authorities specialise, such as Reinsurance (5) and Fund Management (17). By contrast, South Holland specialises in much more common specialisms, such as Forestry (113), and Meat Processing (95). In other words, we use the ubiquity of the specialisms to correct the diversity measure. But this ubiquity measure may again be misleading – not all specialisms which are only held by a few places are high-value. So we again need to ask the diversity question – how many of these places have diverse industry? This continues from one side to the other of the matrix, gradually separating out places until a final ranking is achieved. (In the end the City of London ranks first among local authorities, South Holland ranks 320th.)

It must be stressed that at no point is the ECI given any information about the output of different sectors or places, but its findings continue to align very well with various measures of economic success.

Figure 2: An example economic complexity matrix



Complexity analysis correlates closely with productivity. The complexity calculation does not include any figures on the value of different industries, it ranks LEPs in a manner very similar to that we see when we rank LEPs according to the purest measure of labour productivity, GVA per hour. This strongly suggests that economic complexity is a driving factor in determining productivity.

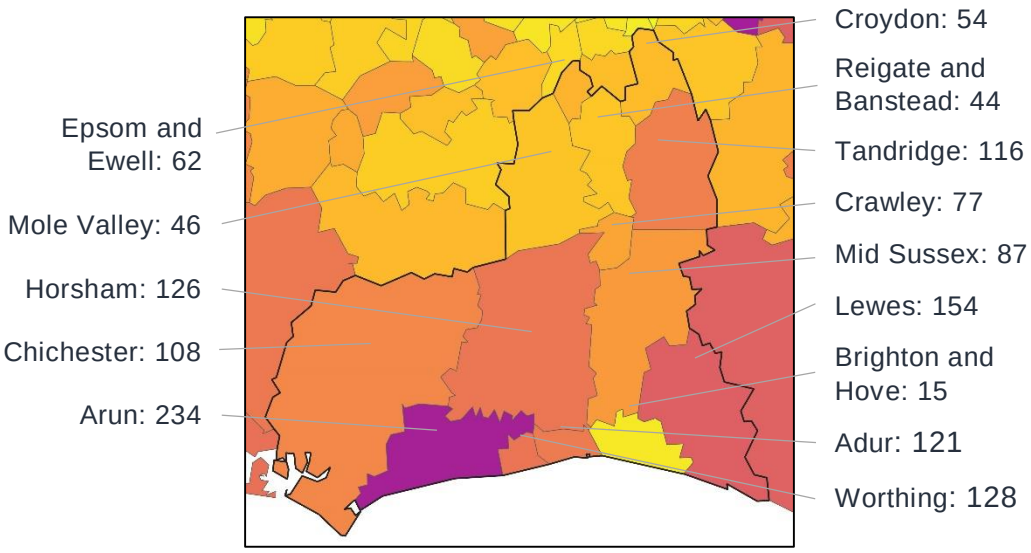
Figure 3 presents how Coast to Capital's economy is ranked, compared to the other LEPs across GB. It ranks 7th, for both Economic Complexity and Productivity. The LEP exhibits high levels of economic complexity, but ranks behind London, Thames Valley Berkshire, Buckinghamshire Thames Valley, West of England, Hertfordshire, and EM3 (in that order). Interestingly, with one exception, these places are all within the commuter belt of London. The fact that South East LEP is lower down the rankings suggests areas to the West and North of London have greater economic complexity than those to the South and East.

We can go a step further, assessing the economic complexity for Local Authorities across GB. Figure 4 presents the local authorities within Coast to Capital, ranking each one out of 371. Brighton and Hove is the most economically complex district by some distance, it is also ranked 15th in GB. This rises to the 5th (behind Cambridge, Edinburgh, Oxford and Bristol), when London boroughs are excluded, showing how important this area is to the national economy.

However, there is a clear disparity between Brighton and the remainder of the LEP. The ranking of the second highest is Reigate and Banstead at 44, with the lowest being Arun at 234 out of 371. It appears to be imbalanced, particularly with regards to economic complexity and productivity, with great variations north to south and east to west.

Figure 3: Complexity and productivity among LEPs

Figure 4: Rankings out of 371 Local Authority Districts in Great Britain



There are fault lines within the Coast to Capital economy

Despite its strengths, there are clear weaknesses within the Coast to Capital economy which are likely to constrain its future performance if left unaddressed.

While Coast to Capital is a large economy, growth has been limited for a number of years. Since the financial crisis in 2008, growth rate in Coast to Capital has declined. Between 1998 and 2008, the GVA in Coast to Capital grew by 2.2%. Between 2008 and 2017, it has grown by just 0.8%.

This is a far weaker rate of growth than many local LEPs. Coast to Capital grew at a faster rate than Solent LEP, which grew at 0.7%, but significantly slower than the rates for the South East, London, Enterprise M3, Oxfordshire and Buckinghamshire and Thames Valley LEPs.

Although Coast to Capital is a very productive economy within the UK, it is less productive than many of its neighbours. The GVA per hour in Coast to Capital is behind many other LEPs in the South and South East. It has a lower GVA per hour than London, Thames Valley Berkshire, EM3, and Buckinghamshire Thames Valley. It also falls behind highly productive economies elsewhere in the UK: Cheshire and Warrington, and Oxfordshire for example.

Coast to Capital's specialisms are weakening and several key businesses have moved out

Several of Coast to Capital's high value sectors have declined in specialisation since 2012. Both Creative arts and entertainment activities and Publishing are specialised sub sectors within the C2C economy, but, since 2012, have declined in specialisation, both having lower LQ scores in 2017. Air transport and insurance, reinsurance and pension funding, have both declined in specialisation. [Figures 5 and 6]. Creative arts and entertainment industries has also become less specialised since 2012.

These are worrying signs. Our consultation has revealed that several key businesses have left, or are considering leaving the area, taking their jobs with them. Canon has recently announced plans to move its base from the area, while some firms have moved their R&D and advanced manufacturing facilities overseas.

Figure 5: Top 20 SIC2 sub-sectors by LQ for Coast to Capital (excluding Croydon and Lewes) (>1,000 jobs) (2017)

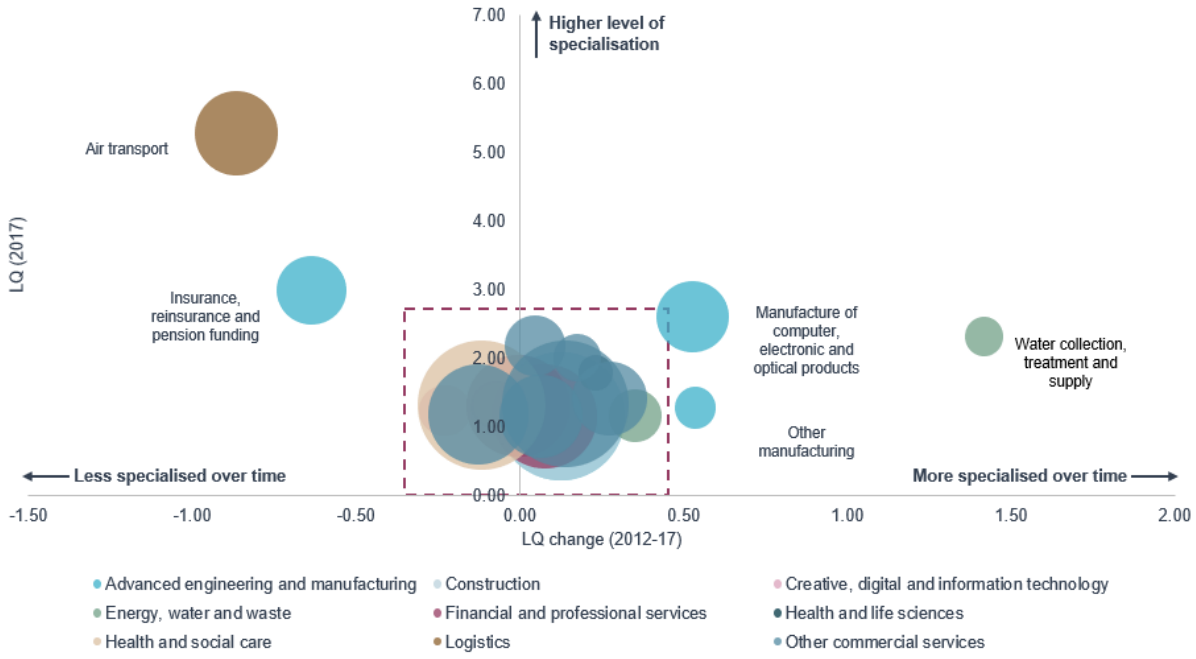
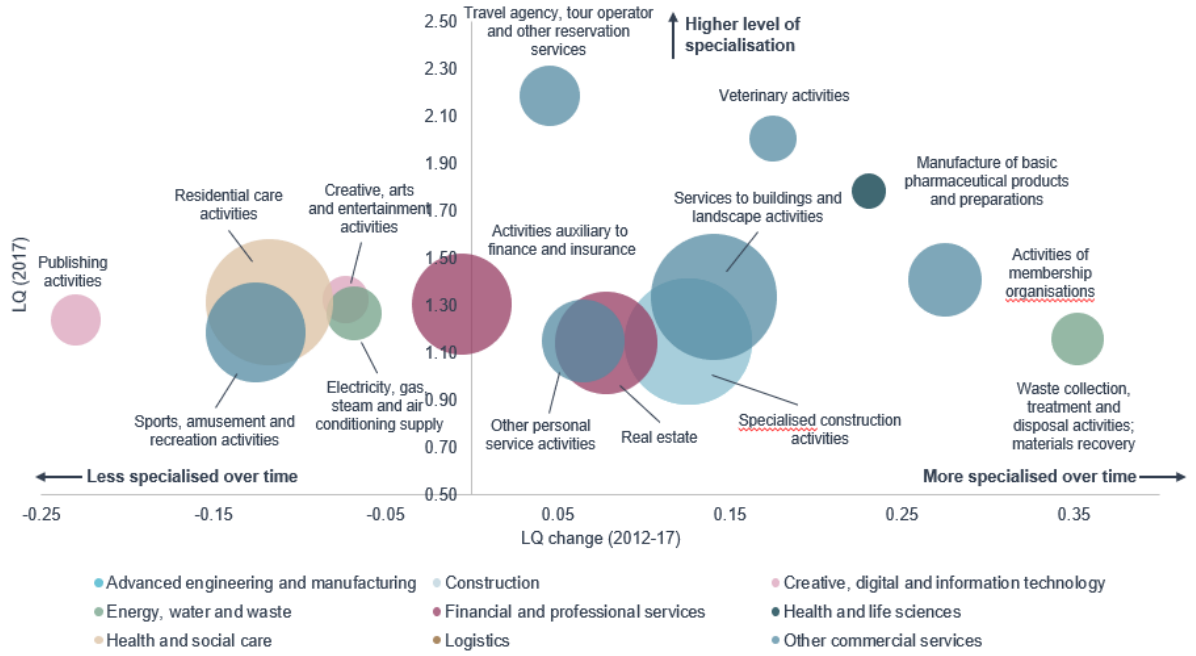


Figure 6: Zoom in of top 20 SIC2 sub-sectors by LQ for Coast to Capital (excluding Croydon and Lewes) (>1,000 jobs) (2017)



Demographics

Coast to Capital's economy is growing, but there is a lack of young people in the labour market, particularly compared to faster growing LEPs. There are around 1.54 million people living in Coast to Capital. Since 2013, the population has grown at a slightly higher rate than both England and the wider South East, with this growth expected to continue and remain above the national and South East rates over the next twenty years. Despite this, there is a lack of young people in the labour market compared to faster growing LEPs – there is a lower proportion of the population aged 25-29 and 30-34 compared to the national average.

Around 1.26 million of Coast to Capital residents are of working age (aged 16 – 64), with a slightly higher proportion aged 44 – 56 compared to the national average. The working age population differs across local authority areas. Brighton and Hove, Crawley and Croydon have the highest proportions of working age populations, particularly those aged 24 to 49. Across Coast to Capital, Brighton and Hove accounts for a fifth of all working age residents.

A relatively high proportion of the Coast to Capital population commute out of the area for work. 23% of residents work outside Coast to Capital, 56% of residents work within the area (not including working from home); 12% work from home and 9% work offshore or have no fixed workplace.

The proportion of residents commuting outside Coast to Capital is higher in local authority areas to the north of the LEP, with closer proximity to London, such as Epsom and Ewell (49%), Croydon (47%), Mole Valley (31%), Reigate and Banstead (27%) and Tandridge (29%).

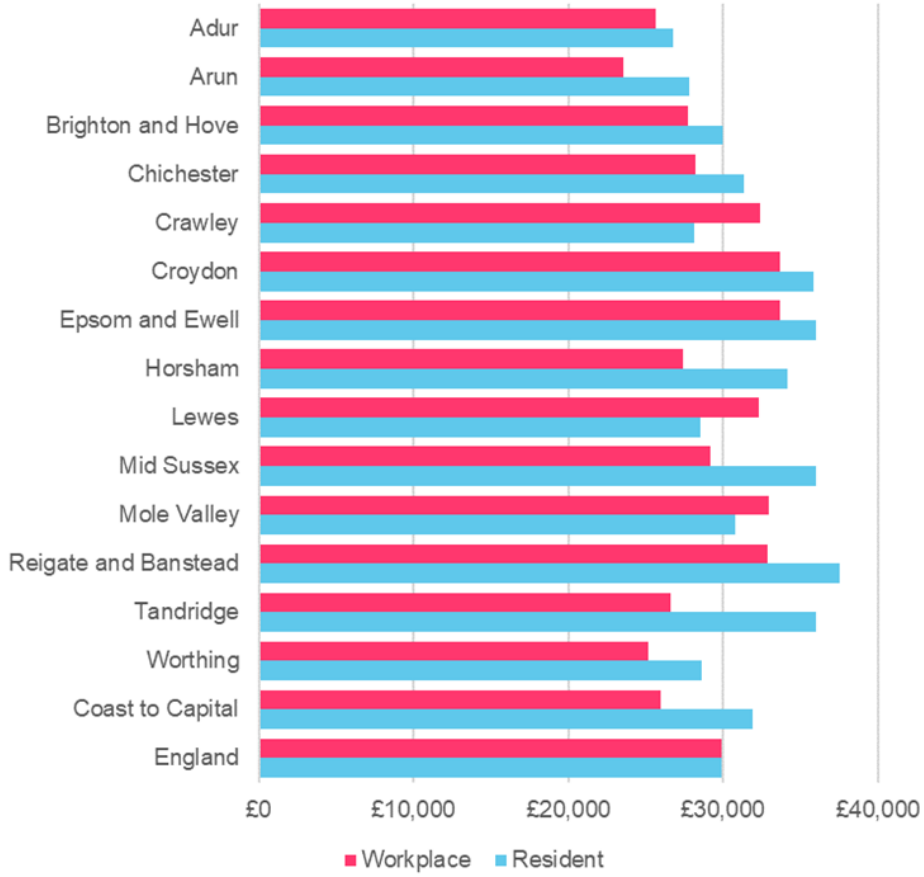
Out commuting is lowest in Coastal areas, particularly Adur (5%), Worthing (6%) and Arun (5%). Low proportions of out commuting correlates with high levels of deprivation in education and employment.

Earnings

The prevalence of commuting in Coast to Capital has an impact on wages. Figure 7 shows the Gross Median Annual Earnings in the Coast to Capital local authorities and the national average. The average earnings of residents in Coast to Capital (£32,000 per year) is above those paid at the national level (£30,000). Resident earnings are also higher than the average worker across Coast to Capital (£26,000). The proximity of London has solidified established a well-travelled commuter route and as a result, the residents in Coast to Capital are able to achieve much higher wages outside the LEP.

These differences are reflected in the labour market condition in the places that make up Coast to Capital. Despite above average earnings for residents in the LEP area, residents in the five coastal local authorities (including Adur, Arun, Brighton and Hove, Lewes and Worthing) earn below the national average.

Figure 7: Gross Median Annual Earnings (£), Coast to Capital

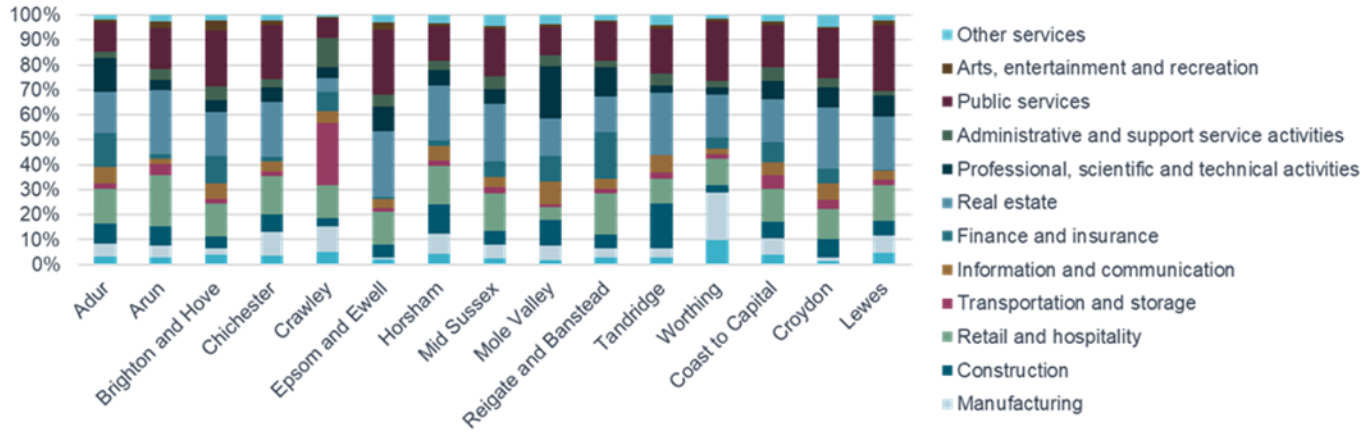


While Coast to Capital is a strong economy, the strength and size of neighbouring economies, particularly London, is attracting some of its most productive workers.

The Problem of Place in Coast to Capital

Our analysis has shown that Coast to Capital is a large and relatively strong economy but has seen a concerning slowdown in growth in recent years. The real challenge to the Coast to Capital economy is hard to spot from an analysis of headline metrics at the aggregate level. Closer analysis shows that there is considerable variation across the places that make up the economy.

Figure 8: GVA per sector (2017)



This is made clear by the sectoral mix across the local economies [figure 8]. For instance, while finance and insurance is a relatively large sector in Coast to Capital, at around 8% of total GVA (£3.4bn), it is predominantly concentrated in Reigate and Banstead and Brighton and Hove. In Reigate and Banstead, the finance and insurance sector is worth £997m, 19% of total output in the area. In Brighton and Hove, it is worth £852m, 11% of the local authority total. Combined, Reigate and Banstead and Brighton and Hove account for 54% of Coast to Capital's finance and insurance industry.

These types of trends are conducive to the economy as a whole. This has led us to believe that there is no one 'economic hub' that is central to the LEP. Instead, we believe Coast to Capital to be three separate, and currently disparate places, with their own economic characteristics and dynamics. Understanding the Coast to Capital economy requires an understanding of these differences in the context of place.

Place: Brighton, the digital hub

Brighton is Coast to Capital's main urban area. With a GVA of £7.8 billion it is the largest economy in the LEP area, accounting for nearly 19% of the LEP's economic output and population respectively. It is the digital hub of Coast to Capital, full of start-ups, freelance workers and large organisations undertaking innovative research. Its two popular and research-intensive universities draw skilled people into the city, many of whom remain in the area to live and work. Its co-working spaces are encouraging start-up activity and city-wide collaboration between large and small businesses.

In Brighton and Hove, the Information and communication sector is worth £485 million, 23% of the total sector in Coast to Capital. This is significantly larger than the IT sector in Crawley, worth £293 million, or 14% of the Coast to Capital total for the industry.

The IT industry is concentrated within Brighton and Hove largely because of what it has to offer. Brighton's universities, its diverse cultural scene with galleries, comedy bars and student exhibitions, its café culture and vibrant nightlife, caters to a range of different tastes and communities. The liberal and relaxed culture, its excellent connectivity to London and the small

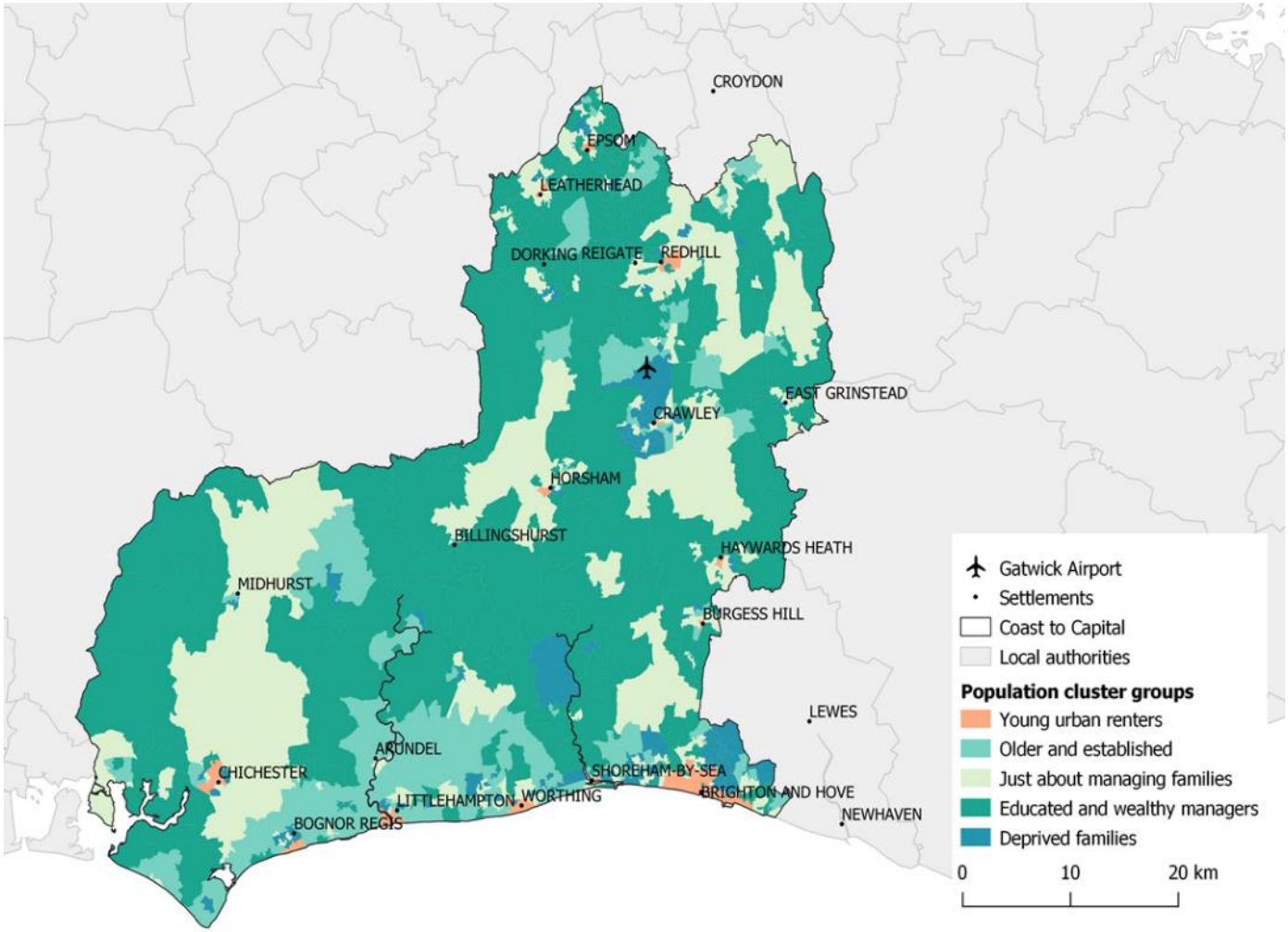
business community which supports and nurtures start-up development, are all attractive to young people at the beginning of their careers.

It is this combination of support structure and social life which draws in talented people who want to work, but also live in the city. Today, the boundary between social and business events has blurred, turning whole places, most often cities, into innovation ecosystems in their own right. Brighton has got this right, and its cultural strengths provide a strong talent pool for the businesses based in Brighton and Hove, fuelling the community of innovators who work and interact throughout the city.

Brighton's status as a dynamic urban economy is made clear through our analysis of population clusters. To better understand the characteristics of residents living in different parts of Coast to Capital, particularly those most likely associated with innovation (younger, highly skilled, early in careers), we have conducted a cluster analysis using a series of demographic and socio-economic variables [figure 9].

The results of this analysis identified five broad categories that ascribe residents of Coast to Capital to different socio-economic groups. At a local level, places are categorised by the group which is most representative of the area. This shows that Brighton and Hove has the highest concentration of young urban renters – highly qualified young people in professional jobs in their 20s, most likely privately renting – in comparison to the rest of the Coast to Capital area.

Figure 9: Population clusters, Coast to Capital LEP



Testimonies by large and small businesses in the region confirm this. Demand for business start-up space in Brighton itself is high, driving up the cost of land and ready-to-use office space, filling those available with active and creative workers. Businesses stress that the pool of talent is excellent, but struggle to find the space to expand their businesses and make hiring possible.

Businesses based elsewhere in the Coast to Capital region, in contrast, stressed that it was often difficult to attract job candidates. This is likely a direct result of the two cities to the North and south, London and Brighton, attracting much of the talent. Young qualified workers are attracted to the lifestyle and the network of peers and potential collaborators, these places draw them in and exacerbates the problems elsewhere.

This in turn is putting strain on Brighton's infrastructure. Demand for residential and business space is increasing the city's density, leaving very little room for businesses to expand. Many of the businesses and hubs we spoke to mentioned that while they can often find the desk space from which to start a business, as they grow and look to move into offices with higher capacity, they are faced with daunting costs for space.

Brighton's growing population is increasing the need for more residential units, which exacerbates this problem further. Expansion into the surrounding countryside is limited by the protections put on the surrounding green belt, adding further pressure onto the market. While the high cost of land is a problem across the LEP, testimonies from operators of start-up units and the SMEs which operate in Coast to Capital have clearly pointed to Brighton as the hottest spot in the Coast to Capital area. Brighton's popularity is a reason for its success, but it is now limiting its ability to grow further.

Place: The Gatwick Diamond

The Gatwick Diamond stretches from Croydon down to Brighton, centring around Gatwick Airport, Crawley and Redhill. Home to 45,000 businesses and 500 international businesses, including many large multinationals, its key sectors include medical engineering, aerospace and service industries. Combined, the towns of the Gatwick Diamond account for £24bn, over half of the total size of Coast to Capital's economy.

Gatwick Airport sits at the heart of the diamond and is the most important economic asset. The airport directly employs 23,800 people and supports another 60,000 jobs in the wider UK economy. It contributes £1.6 billion directly to the Gatwick Diamond area, providing a total £2.7 billion GVA in the Coast to Capital economy and a total £5.3 billion GVA in the UK economy through wider supply chains.[3] It attracts multinational businesses to the area which need international connectivity to operate and connects local businesses to new markets.

Crawley is the largest economy in the Gatwick Diamond, its GVA of £6.1 billion accounts for 14.3% of the Coast to Capital Economy. It is also one of the most productive towns in the country, with the 9th highest GVA per head of any local authority. The Manor Royal Business District is home to more than 500 businesses employing 30,000 people, and hosts the headquarters for Virgin Atlantic, CGG, Thales, Varian Medical Systems, Elekta and others.

Unlike Brighton, the Gatwick Diamond has far lower levels of young urban renters. Instead, the area has high concentrations of deprived families, particularly in Crawley. While there is a small cluster of young urban renters in the town, this pales in comparison to the levels found in Brighton. Redhill has higher concentrations, likely because of its closer proximity to London and the links to commuting into the city.

[3] Gatwick 360

Large patches of the Gatwick Diamond area are dominated by educated and wealthy families and older and established workers in the rural areas of the Gatwick Diamond. These are usually based in the smaller villages in the countryside, which are expensive to live in and out of reach for many young people. Added to this, none of the villages and towns that make up the Diamond have a comparable cultural and entertainment offer to Brighton or London. For many young people, the appeal of London and Brighton is too high to want to make a home in the Gatwick Diamond area. The lack of a higher education presence in the Gatwick Diamond adds to the struggles of retaining young people; unlike Brighton and Chichester, there is no annual influx of young people to the area. When rents and house prices are high, the appeal diminishes further.

This has an impact on the businesses that operate in the diamond. With no regular talent supply chain, many of the local businesses struggle to attract the workers they need. Many of these are large multinational companies, including Thales and Elekta, which manufacture and design innovative and high value products and components which feed into global supply chains. These businesses require bright, skilled workers for highly technical jobs, who are able to innovate and develop new products. In interviews, businesses from the area have highlighted difficulties in attracting and retaining young graduates. The towns in the Gatwick Diamond struggle to offer the lifestyle to appeal to such a demographic and lack the higher education institutes which Brighton has.

The Gatwick Diamond, despite its size, also has a limited supply of business space, further curtailing its appeal to any but the largest and most well-resourced businesses. Within Gatwick Airport, the business must benefit the airport to be based there. In Manor Royal Business Park, space is maxed out and there is no room for expansion. Whilst there is potential for co-working space, any industrial development is too expensive for companies to consider.

Place: The South Coast Corridor

Stretching from Brighton to Chichester, this is an attractive area for both young renters and the older professionals. The Brighton, Sussex and Chichester universities attract students, whilst there is a strong contingency moving out of London to the South Coast to raise families and commute into the capital instead.

Although land is expensive, there are clusters of business activity, particularly in Worthing, Shoreham and Chichester, specialising again in IT, engineering and life sciences, such as Ricardo, Edwards High Vacuum, and Respironics. These places offer lower rents than Brighton and Crawley and as a result are attractive options for businesses. As the cost of operating a business in Brighton increases, the appeal of towns along the south coast increases. They are well connected enough to Brighton to sit within its sphere of influence and offer the quality of life which draws people to the south coast.

Older established workers are attracted to the South Coast Corridor for its quality of life. The economies are not of a comparable size to Brighton or the Gatwick Diamond, but have an opportunity to grow from the businesses which cannot afford to operate in Brighton.

The Innovation Story

Innovation can be particularly difficult to define and even harder to measure. In our analysis we have used a multitude of innovation metrics, focusing specifically on research and development (R&D), to obtain an understanding of the state of the innovation ecosystem within Coast to Capital. In addition, we have conducted 22 interviews with key businesses and education institutions, testing our statistics against local knowledge and gathering valuable insight.

To answer the question of "is the area innovative", the simple answer is 'yes', the more complex answer is 'yes but our findings indicate the R&D is declining', which our research will build on. Figure 10 demonstrates merely a snapshot of activity that occurs within the area. Referring back to 'place' within Coast to Capital, not only are the local economies different in Brighton, Gatwick and the South Coast, but the innovation ecosystems are similarly as disparate.

The Brighton Ecosystem

There are some clear strengths in innovation within Brighton, which cannot be discussed without touching again on the culture of the city. Brighton is full of small-scale businesses and entrepreneurs who thrive off each other in a collaborative environment. The large firms have a lot of intelligence and capital whilst the start-ups work together, sharing ideas and skills to compensate for their lower revenue. Following the success of these companies and the presence of a collaborative 'community', Brighton has established itself as one of the primary digital hubs within the UK.

Brighton benefits from the presence of both the University of Sussex and the University of Brighton, key institutions that are attracting young, dynamic people to the city and undertaking research. The University of Sussex is also home to Sussex Innovation Centre, working with academics, graduates and small SMEs to bring products to the marketplace.

Brighton is home to Wired Sussex, a not-for-profit membership organisation. This has a tech hub called the Fusebox, a space for digital and tech businesses to share skills and knowledge in an open environment, with access to emerging technologies. It houses a 5G testbed, providing start-ups and scaleups with an opportunity to learn and develop products with new technologies.

In addition to Wired Sussex, is Digital Catapult, a centre that works across the LEP, focusing on creative industries and retail, to accelerate sustainable growth and encourage collaboration through digital innovation. This type of environment is exactly why Brighton is the standout innovation ecosystem within Coast to Capital.

The Gatwick Diamond Ecosystem

The Gatwick Diamond has a significant cluster of innovation, home to both Manor Royal Business Park in Crawley and Gatwick Airport.

Manor Royal has a cluster of engineering and electromedical manufacturing companies, including the global businesses of Varian, Elekta, Thales and Rockwell Collins. These companies have invested considerably into R&D internally, both in the medical and defence sectors. Elekta has established Crawley as their UK headquarters, investing heavily in their manufacturing and office facilities. Thales are an extremely important presence, with significant manufacturing and engineering facilities for the defence and space sector. The investment by these companies and others, presents Manor Royal as a very lucrative innovation environment.

Manor Royal is situated next to Gatwick Airport, a key institution in the UK aerospace industry. Gatwick not only has a heavy logistics and aerospace sector but also pockets of innovative companies looking at how to run the airport more efficiently using new technologies. It works closely with Heathrow and other London airports, sharing their research and knowledge via airport forums and meetups. The airport itself works directly with an accelerator in Silicon Valley which develops digital and technology ideas with their internal innovation team.

However, the proximity of Gatwick Airport to Manor Royal means that as the airport expands, it restricts any further growth of Manor Royal. This is becoming detrimental to the business park as it seeks to attract further investment and companies to the plot.

Innovation Across Coast to Capital

Across the LEP, in some quite discrete locations, there are pockets of impressive innovation. Despite the challenges around connectivity in some of the rural areas, there are some major, international companies operating.

Ricardo Engineering have their headquarters located in Shoreham, where they undertake large-scale manufacturing of engines, transmissions, electric motors and fuel cell systems. Ceres Power, located in Horsham, in a similar vein, manufacture solid oxide fuel cells that generate electricity naturally and efficiently. This type of investment is crucial to the economy, but it is rare and unlikely to grow beyond the already established businesses.

Innovation can relate to R&D in engineering for example, but it also covers simple aspects of co-working and collaboration. Coast to Capital has an abundance of businesses in the Horticulture and Viticulture industries, which rely on collaboration locally, regionally and internationally in order for the sector to grow. The sparkling wine industry and the Growers Association all share ideas, innovation, research and expertise with what would traditionally be considered as 'competitors', with the belief that this collaboration benefits the industry as a whole.

Figure 10: A snapshot of the R&D within Coast to Capital

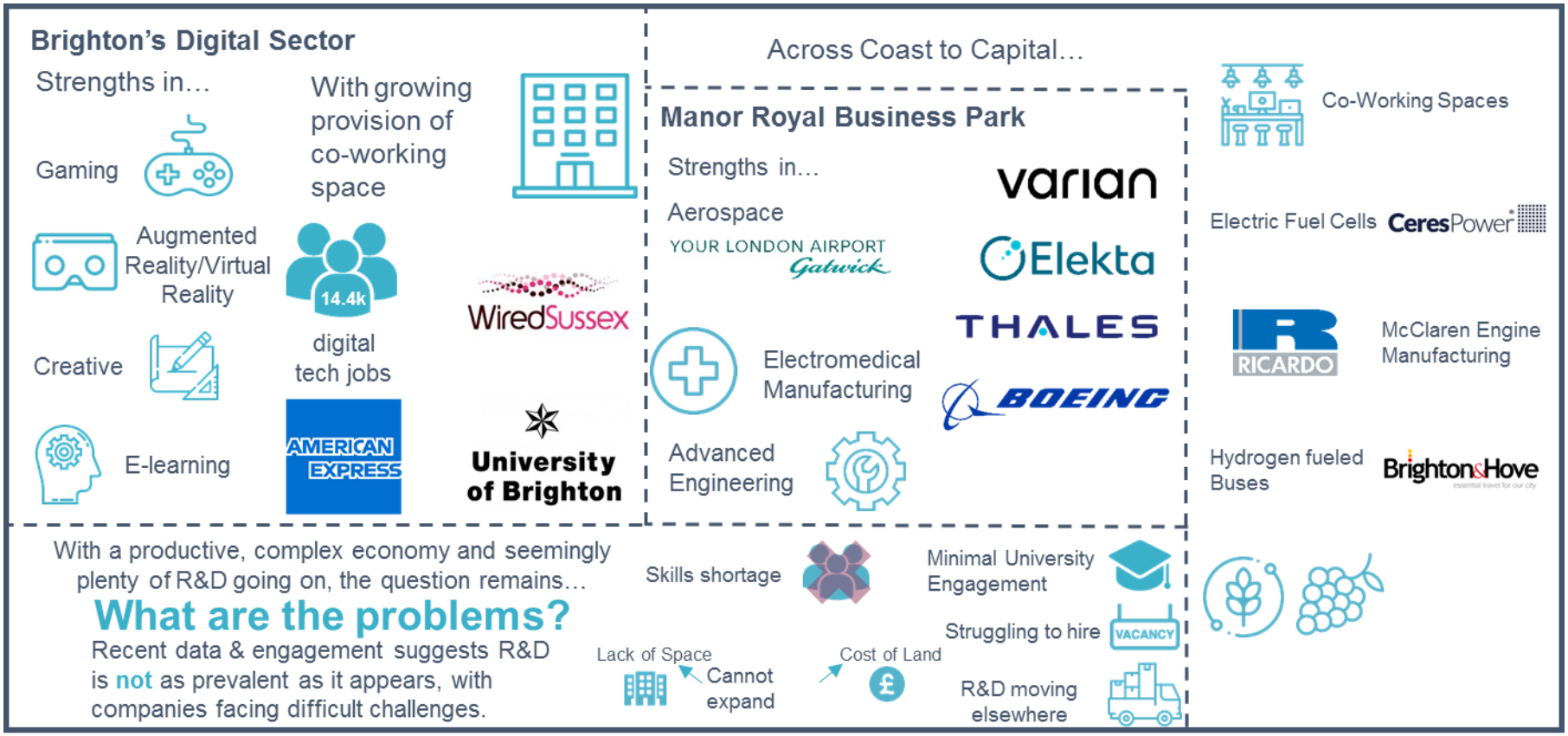
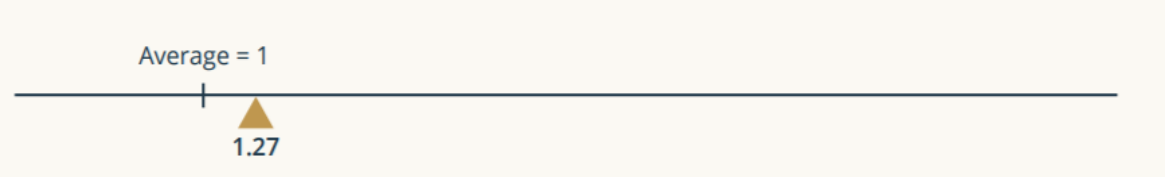
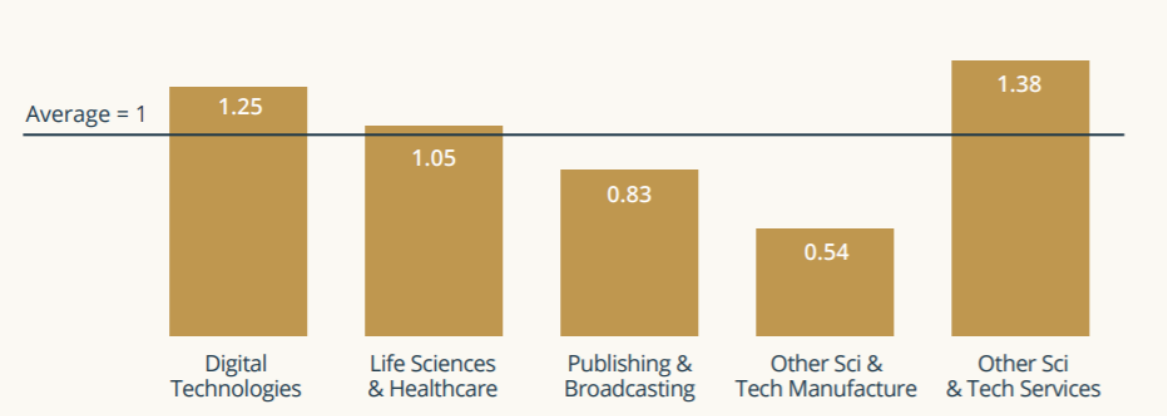


Figure 11: The number of active innovation firms (Smart Specialisation Hub)



Smart Specialisation Hub released a LEP profile report, identifying sectoral and innovation capabilities in Coast to Capital, benchmarking the performance against other LEPs. This research highlights that Coast to Capital has a higher number of innovation firms than the national average, a strong indicator of high innovation potential.

Figure 12: Employment by Science and Technology category (Smart Specialisation Hub)



The same research has looked at employment within science and technology sectors, generally areas that drive innovation and R&D. Coast to Capital has strengths in digital technologies, life sciences and healthcare and other science and technology sectors.

It is easy to conclude that when coupling the economic metrics with the R&D projects, the innovation ecosystem seems to be in a very healthy place. However, when investigating this in greater detail, there are underlying issues that point towards a more problematic ecosystem, one which is not as prosperous as it first appears.

Our engagement has found companies of all sizes, not only experiencing very similar challenges but providing a more realistic insight into R&D within the LEP. We have looked at key innovation metrics which show that Coast to Capital not only has low investment and funding in the public sector, but the private sector also. The following section will go into detail about each of these metrics, explaining where Coast to Capital sits in relation to both national and regional comparators.

Innovation Metrics

The gross domestic expenditure on research and development (GERD) is a measure of the total R&D activity within four sectors of the economy – business enterprise (BERD), government (GovERD), higher education (HERD) and private non-profit organisations (PNPERD). We have looked at each of these metrics in order to get the full picture of innovation throughout Coast to Capital, with further comparisons to similar LEPs in the south of England.

Figure 13 shows the government and business enterprise spend per person across the south of England LEPs, the South East region and the UK. The gross expenditure (GERD) spend per person is £206, drastically lower than neighbouring LEPs and the national average, indicating a severely underfunded innovation ecosystem.

The total R&D spend in Coast to Capital is £413m, ranked as 22nd amongst all LEPs. Of this £413m, 70% of the expenditure is by businesses. This is again lower than other LEPs – Solent (70.3%), EM3 (79.7%), South East LEP (84.0%). The business enterprise spend per person highlights the disparity between Coast to Capital and the other comparators.

Figure 13: Intramural R&D expenditure: GERD and BERD – spend per capita (£, 2015)

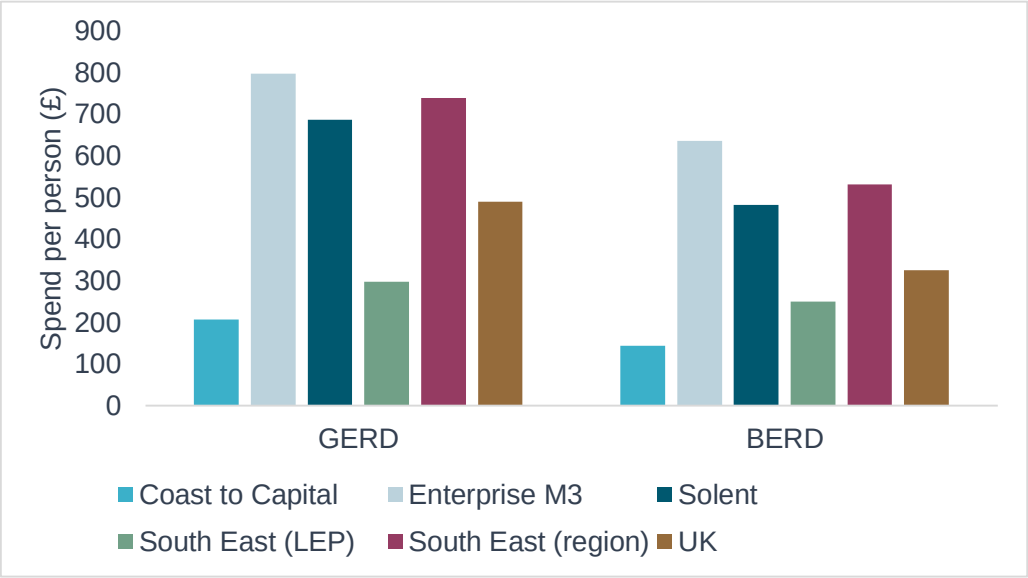
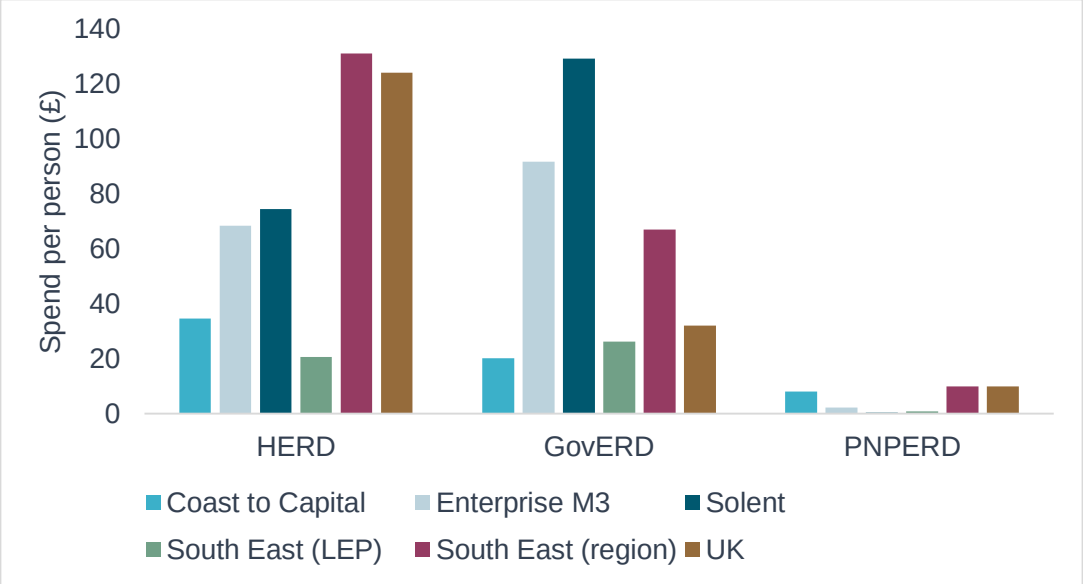


Figure 14 presents expenditure of Government, Higher Education and private non-profit organisations. Generally, across the South of England LEPs, the higher education spend is lower than the national and regional values. The comparator LEPs also have considerably lower higher education and government expenditure per person. However, Coast to Capital still has half the spend (£35 per person) of EM3 (£68) and less than half of Solent (£74) within higher education. This points towards the lack of higher education institute funding within the region. Government spend is even lower in the (£20 per person) when compared to the same LEPs (EM3 - £92; Solent - £129), indicating either a severe lack of public sector funding, or perhaps a lack of application for funding.

Figure 14: Intramural R&D expenditure: GovERD, HERD and PNPERD – spend per capita (£, 2015)*



R&D Tax Credits

R&D tax credits support companies working innovatively to advance science and technology. To meet the criteria, projects should advance the overall field, rather than just for the purpose of the business. Tax credit relief is available for both SMEs and large companies.

Overall, there were 860 claims made in Coast to Capital with a value of £83m. Almost 85% of these claims were made via the SME R&D scheme, amounting to £44m.

The remainder were made via schemes for large companies. For instance, eight were made via the large company R&D scheme, and almost 60 were made via Research and Development Expenditure Credit (RDEC) for large companies.

RDEC can also be claimed by SMEs who have been subcontracted to do R&D work for a large company, or who have received a grant or subsidy for their R&D project – 47 claims were made via this scheme in Coast to Capital.

The number of claims made by Coast to Capital is around 90 less than EM3, but the value is significantly lower (£63m). This implies that EM3 companies made larger claims for potentially more complex, larger project work. On average Coast to Capital companies made claims of around £96,500, whereas EM3 companies claimed on average £153,500.

In contrast, there were 320 more claims made by South East LEP but the amount claimed was lower than Coast to Capital, so South East LEP companies made significantly smaller claims. This amounts to around half the number of claims of Coast to Capital. Whilst this is low, it is offset by the substantial amounts of government and business funding, particularly compared to Coast to Capital.

Table 2: Summary of R&D tax credits (year unknown)

	Number of claims	Amount claimed (£m)
Coast to Capital*	860	£83
EM3	951	£146
Solent	439	£33
South East (LEP)	1,180	£80

Higher Education Innovation

Universities are central to driving innovation, research and engagement with local businesses or entrepreneurs, as our case studies have suggested. Studying the key innovation statistics associated with higher education research, provides insight into the innovative influence the universities have within Coast to Capital.

Assessing the higher education spend per capita shows that there is relatively low expenditure on R&D from higher education institutions. Research Council UK data provides greater detail on the total scale of the funding and what type of research, if any, is supported.

Comparing Coast to Capital Research Council Funding with the other LEPs highlights the funding differences between the neighbouring LEPs, but also the differences between the education institutes. Coast to Capital is ranked 27th out of all of the LEPs across GB for this funding.

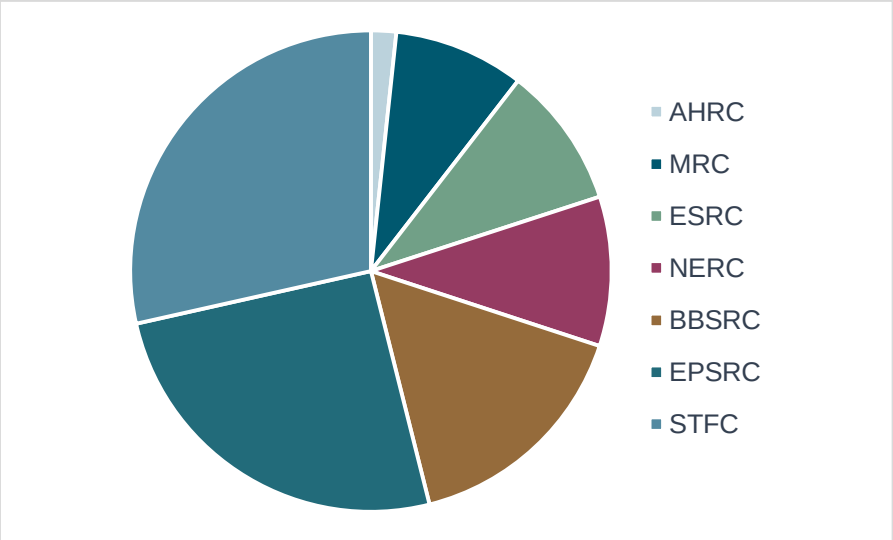
To clarify, Solent LEP has the universities of Portsmouth, Southampton Solent and the University of Southampton; EM3 has Royal Holloway, University of Surrey, University of Winchester and various technical colleges; South East LEP has the 'membership of U9' which includes the universities of Kent, Greenwich, Sussex and Canterbury Christ Church as members. However, this is primarily to inform the LEP of innovation that is being undertaken and sharing best practise. In the LEP itself are the Universities of Kent, Essex, Anglia Ruskin, Canterbury and Writtle. Coast to Capital has the universities of Brighton, Sussex, Chichester and the University for the Creative Arts in Epsom.

Despite Solent LEP having a similar amount of universities as Coast to Capital, it receives over five times the amount of funding. The presence and influence of universities undertaking research is fundamental in receiving Research Council funding. The fact that Coast to Capital is the lowest amongst its comparators indicates a lack of research and perhaps an absence of university engagement in the overall economy.

Table 3: Summary of total Research Council UK (RCUK) funding (year unknown)

LEP	Total funding
Coast to Capital*	£12.9m
EM3	£31.3m
Solent	£67.0m
South East (LEP)	£21.9m

Figure 15: Summary of RCUK funding by Council for Coast to Capital (year unknown)
** Please note, this data includes Croydon and Lewes.*



AHRC – Arts and Humanities Research Council
MRC – Medical Research Council
ESRC – Economic and Social Research Council
NERC – Natural Environment Research Council
BBSCRC – Biotechnolog and Biological Sciences Research Council
EPSRC – Engineering and Physical Sciences Research Council
STFC – Science and Technology Facilities Council

This pie chart shows an in-depth look at the distribution of the £12.9m Research Council funding within Coast to Capital. The primary focus is concentrated in science, technology, engineering and maths (STEM).

16.0% of funding is from the Biotechnology and Biological Sciences Research Council, and almost 9% is from the Medical Research Council, which is a higher proportion than EM3 (3.1%), Solent (3.4%) and South East LEP (7.2%).

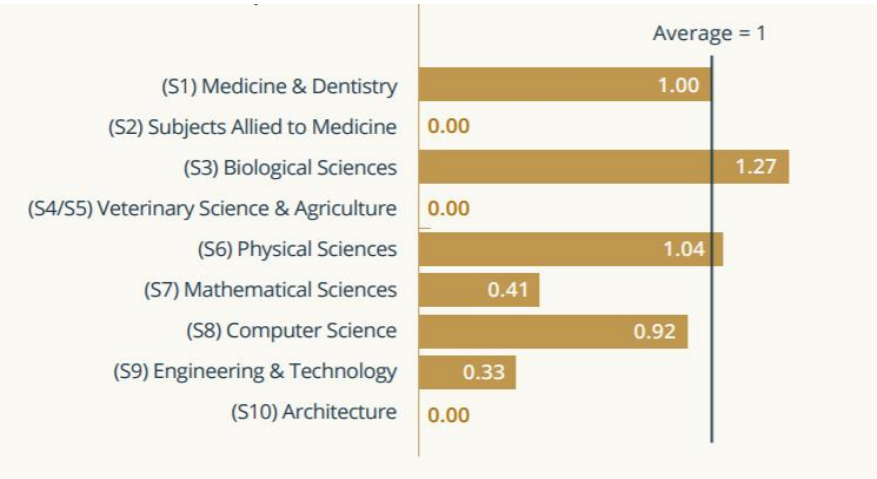
The highest proportion (28.5%) of funding is from the Science and Technology Facilities Council (£3.7m). This is a higher proportion than comparators – EM3 (11.8%), Solent (5.8%) and South East LEP (0.4%), however the total funding must be considered here as the other LEPs still receive greater amounts of total funding.

However, EM3 and Solent a significant proportion of their overall funding, 50% and 70%, from the Engineering and Physical Sciences Research Council, whereas only one quarter of Coast to Capital funding comes from this source. In addition, whilst the proportion for subjects may differ considerably, again it must not be forgotten the gap in funding between Coast to Capital and the other LEPs.

Considering the strengths Coast to Capital has in Engineering and Physical Sciences, the lack of funding from education is concerning, particularly when universities are central to driving R&D. This can be investigated further by looking at the number of staff involved in innovative research.

Figure 16 is taken from the Smart Specialisation Hub's profile on Coast to Capital, benchmarking the LEP against the performance of other LEPs in GB (average = 1). It shows distinct strengths in both biological sciences and physical sciences, but apart from these two subjects, it falls well behind the average on a number of subjects including engineering and technology and mathematical sciences. This reflects back to the low Research UK funding and, whilst it was high for biotech and biosciences, the science, technology and engineering sectors are still suffering, relating back to the lack of staff involved in innovative research.

Figure 16: Indicator of staff submitted involvement in innovative research production to Research Excellence Framework (REF)



Innovate UK Funding

The level of funding allocated to R&D within Coast to Capital can be understood further by studying Innovate UK data. Innovate UK is the innovation agency for the UK, part of UK Research and Innovation. It works with individuals, companies and other organisations to drive innovation in science and technology with the aim of growing the economy.

Table 4 is a summary of funding allocations and spending for businesses and organisations in Coast to Capital, against the regional comparators. The most surprising statistic from this table is that despite having a larger total number of businesses than both EM3 and Solent, Coast to Capital is receiving over £100m less in funding.

Businesses and other organisations within Coast to Capital have been allocated £107.2m of funding to date, which is only 8.3% of the total allocation to the South East region (£1.3bn). It is significantly lower than the allocation to both EM3 (£238.5m) and Solent (£233.3m), which equate to 18.5% and 18.1% of the regional total. The South East LEP also has a higher allocation of £177.6m, and a significantly higher number of businesses.

Table 4: Innovate UK funding (to date – June 2019) and total number of businesses (2018)

	Funding allocated	Funding spent	Total no. of businesses
Coast to Capital*	£107.2m	£78.6m	90,570
EM3	£238.5m	£176.9m	79,460
Solent	£233.3m	£156.8m	42,080
South East (LEP)	£177.6m	£123.4m	169,930
South East (region)	£1.3bn	£819.4m	-

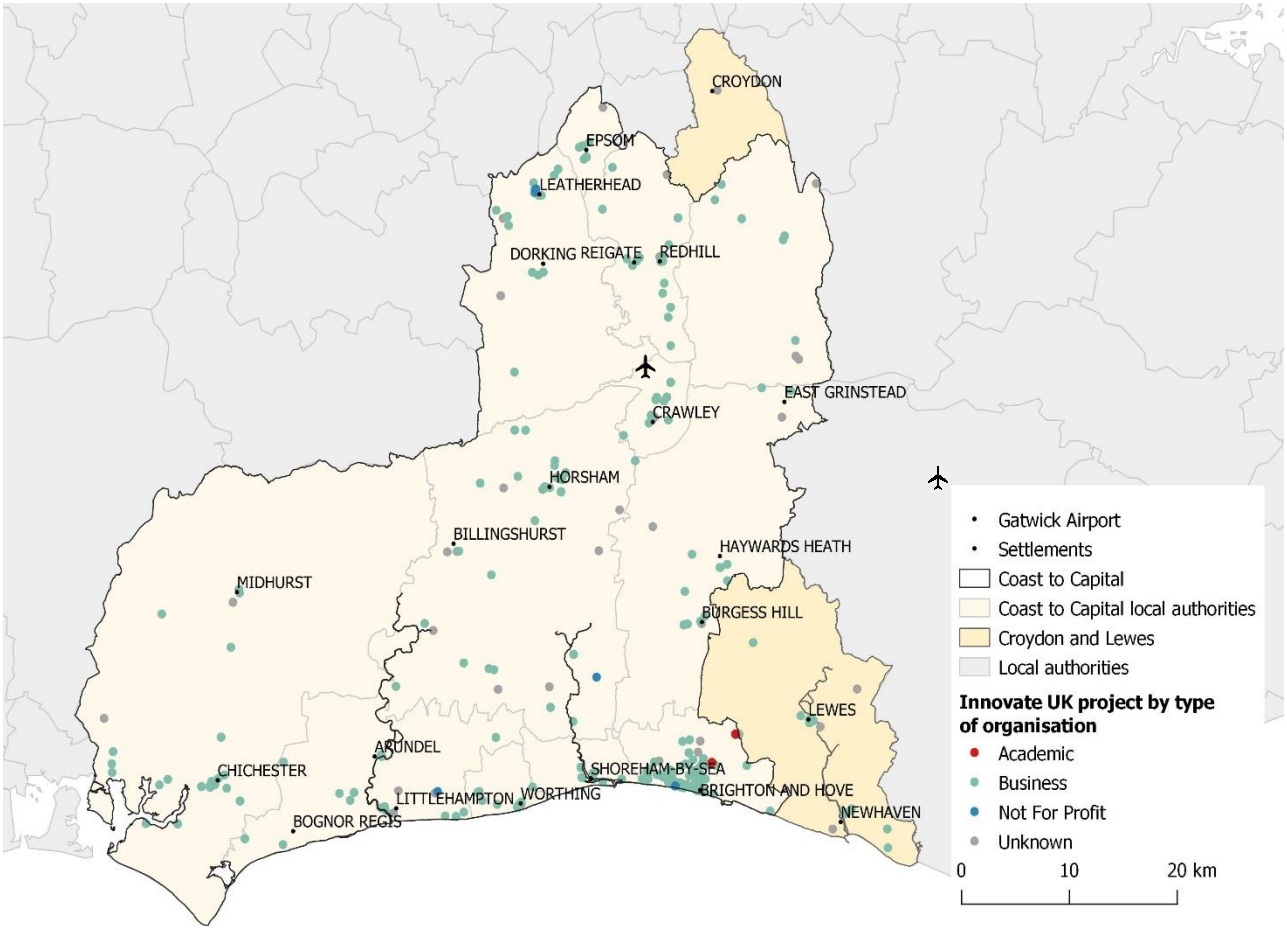
Our engagement work has suggested that this is because companies in Coast to Capital no longer see Innovate UK as a worthwhile method of funding, due to exhausting paperwork and lack of guaranteed success. In addition, the nature of Brighton having smaller businesses operating, i.e. 5-7 people, perhaps means fewer are applying for funding.

However, projects tend to be concentrated in the Greater Brighton area, along the coastline towards Chichester and the Gatwick Diamond. Figure 17 illustrates this, displaying UK projects by type of organisation. Predictably, Brighton has a significant cluster of the business projects. In total (excluding withdrawn projects), there have been 597 Innovate UK projects to date (June 2019) in Coast to Capital (excluding Croydon and Lewes). Three quarters of these projects have been for businesses (448 projects).

In addition, almost 45% of these projects have been for micro businesses (200 projects), refuting the idea of smaller businesses not applying for funding. A further 29% have been for large businesses (130 projects), followed by 20.1% to small businesses (90 projects) and the remaining 6.3% to medium businesses (28 projects).

A further 80 projects have been to academics, with 57 at the University of Brighton and 23 at the University of Sussex. These are in a range of areas, including transport, digital, sustainability, biosciences and health care. Although judging from the map, it is clear how concentrated these projects are within Coast to Capital and how absent academic projects are outside of Brighton and Hove. The sparsity of academic activity in areas like the Gatwick Diamond might then have a knock-on effect; universities frequently engage with local businesses to undertake research for example. The absence of this in the Gatwick Diamond is potentially a reason for the low number of Innovate UK projects by businesses or not for profit agencies.

Figure 17: Innovate UK projects by type of organisation (to date – June 2019)



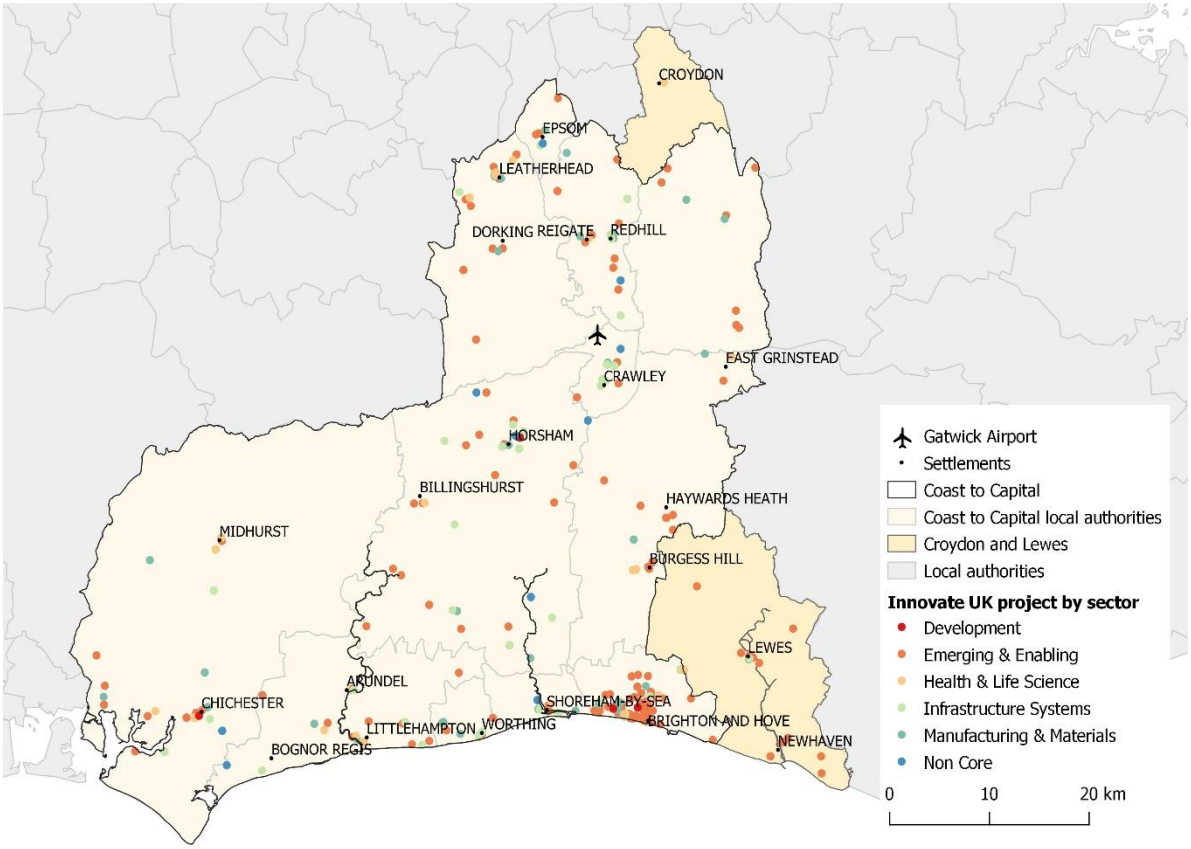
Innovate UK projects can be broken down by sector; manufacturing and materials has received £22.2m in grants, with projects in areas such as advanced materials, high value manufacturing, transport and nanotechnology. There are concentrations of projects in Greater Brighton, Horsham, Crawley and around Leatherhead and Epsom. Recipients include Atkins, Doosan Babcock, EDF Energy, Ricardo and Toyota, as well as the University of Sussex and University of Brighton.

Companies in health and life sciences have been allocated £9.6m of funding. This encompasses biosciences, food supply, healthcare, and precision and discovery medicine. Companies in receipt of grants include Docobo, OptiSense, Philips Medical Systems and Stabiltech, as well as the University of Brighton.

Infrastructure projects account for £17.2m of funding. These are clustered in Horsham, Crawley and the Gatwick to London corridor. Projects have been for companies including Atkins, Balfour Beatty Rail Technologies, Ceres Power, Doosan Babcock, EDF and Ricardo. Projects related to energy, the build environment and transport.

Whilst this may seem like an abundance of innovation, our consultation with some of these companies has suggested that R&D spending has gone down because applying for Innovate UK funding is too time consuming for modern product development. Completing an application can take up to a year, whilst developing a product or service internally, is much faster. Both Ricardo and Gatwick now look at other sources of funding for strategic purposes. They have not applied to funding in the past 12 months, not due lack of success, but because of speed. Some of the SMEs involved in our consultation stated that Innovate UK funding would be considerably more appealing if it was released faster and the overheads were higher.

Figure 18: Innovate UK projects by sector (to date – June 2019)



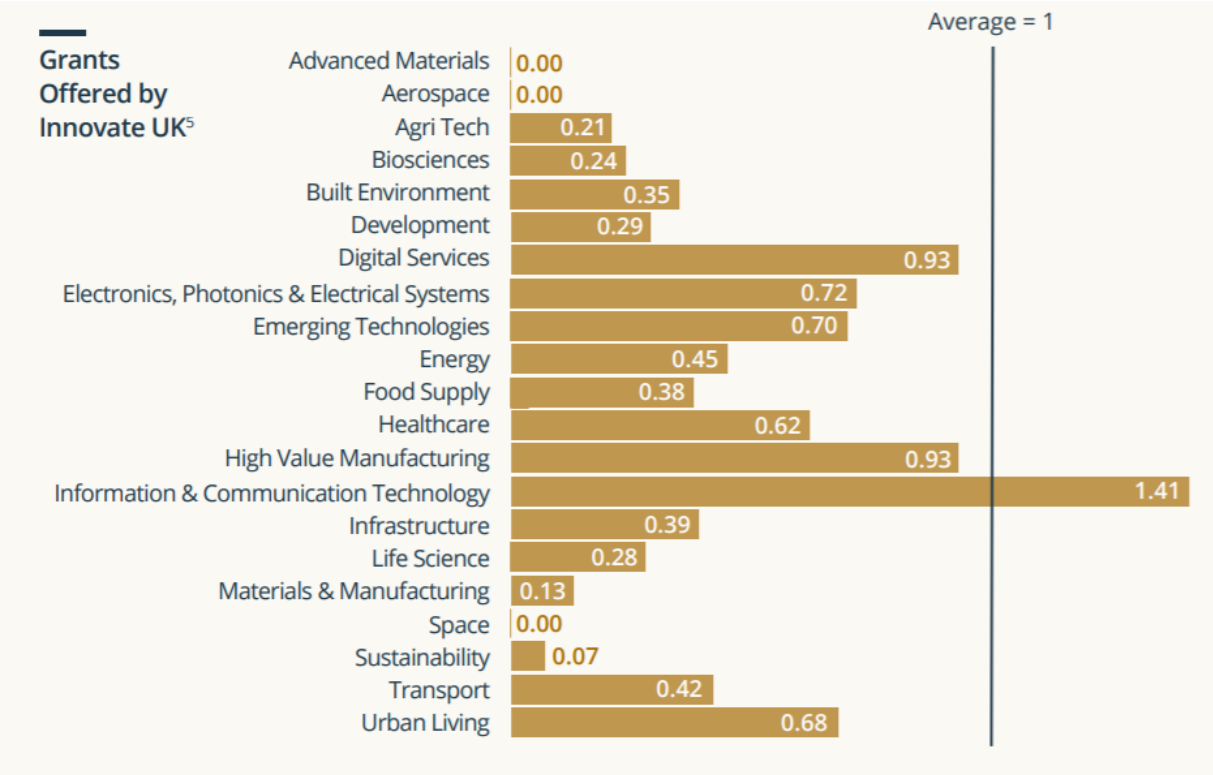
A further insight into Innovate UK funding is looking at allocation of grants. Figure 19 shows the sectors and research areas of projects that Innovate UK has allocated grants to, benchmarked against the performance of other LEPs.

There is obvious success in grants offered within the information and communication technology, well above the average performance, however this is the only specialism for Coast to Capital, with the remaining subjects falling below the average. The success of this is likely due to the digital sector successes and the investments in technology, Wired Sussex's Fusebox for example. However, digital services and emerging technologies are still below the average despite the expertise within Brighton.

Coast to Capital's economy has specialisms in aerospace, advanced engineering and manufacturing, notably with the clustering businesses in Crawley and the presence of Ricardo. However, this is not reflected in either the Innovate UK, Research Council or R&D spending figures. Research areas which should have high funding, as a consequence of business expertise, are far below expectations. High value manufacturing, electronics, photonics and electrical systems, infrastructure and materials and manufacturing are all below the benchmarked average against other LEPs. Advanced materials and aerospace both receive zero grants, despite the presence of Gatwick airport.

Whilst there remains the argument of Innovate UK funding being less appealing, particularly with the application process, it is difficult to argue against the considerable underperformance in sectors like Aerospace and Manufacturing.

Figure 19: Grants Offered by Innovate UK



Patents

To look in more detail at the technological innovation, patents can divulge the amount of research and entrepreneurship of an area. This chart below, taken from the Smart Specialisation Hub profile on Coast to Capital, gives a score for the number of investors across a variety of science and technology areas where 1.0 is the top performer.

The highest score that Coast to Capital has is in food chemistry and IT methods for management, with a score of 0.63 and 0.62 respectively. Food management is likely due to the influence of the Horticulture industries, developing new methods of farming produce. The R&D in this sector is impressive, particularly as it ranges from smaller businesses developing products together, to much bigger enterprises like Tescos and Sainsburys investing research.

The next highest scoring areas of technology are medical (0.52), micro-structural and nano-technology (0.50). It is concerning the low levels of patent activity, particularly when this is such a key metric of innovation within an area that showcases innovation. There are no distinctive strengths across any of the technology areas, again surprising given the rise of gaming, augmented reality and emerging technologies. A lack of patents coincides with the low levels of research funding in education, pointing towards an underperforming innovation ecosystem.

Figure 20: Number of inventors or patents across various

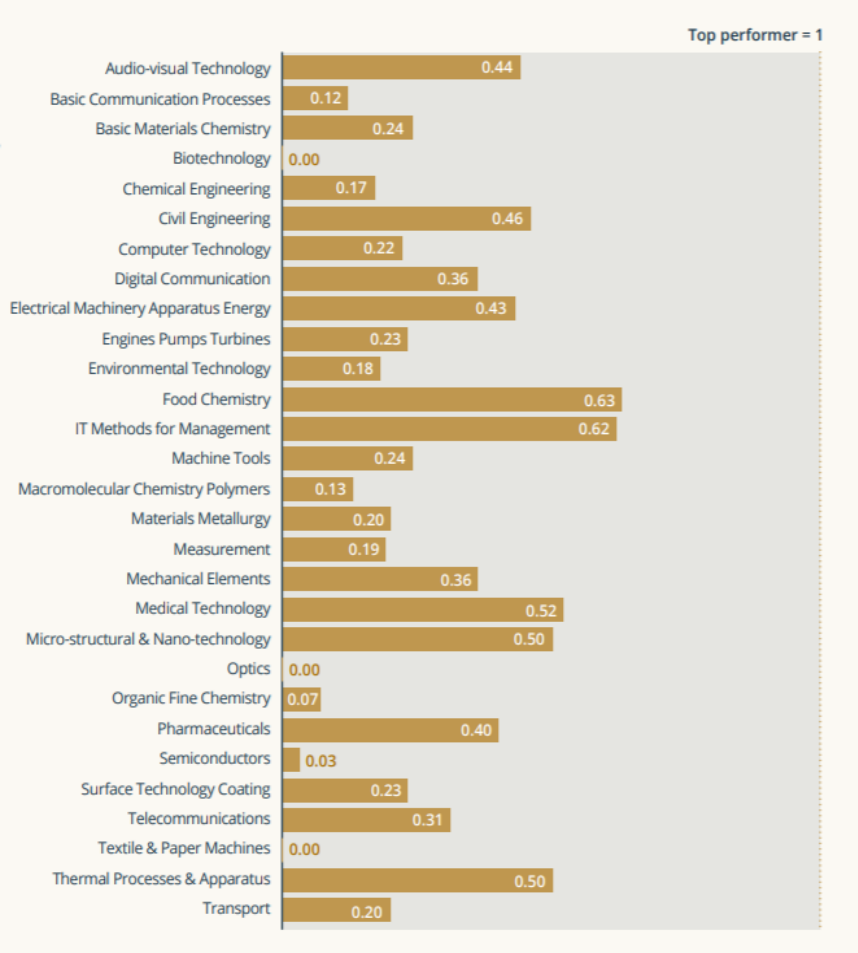
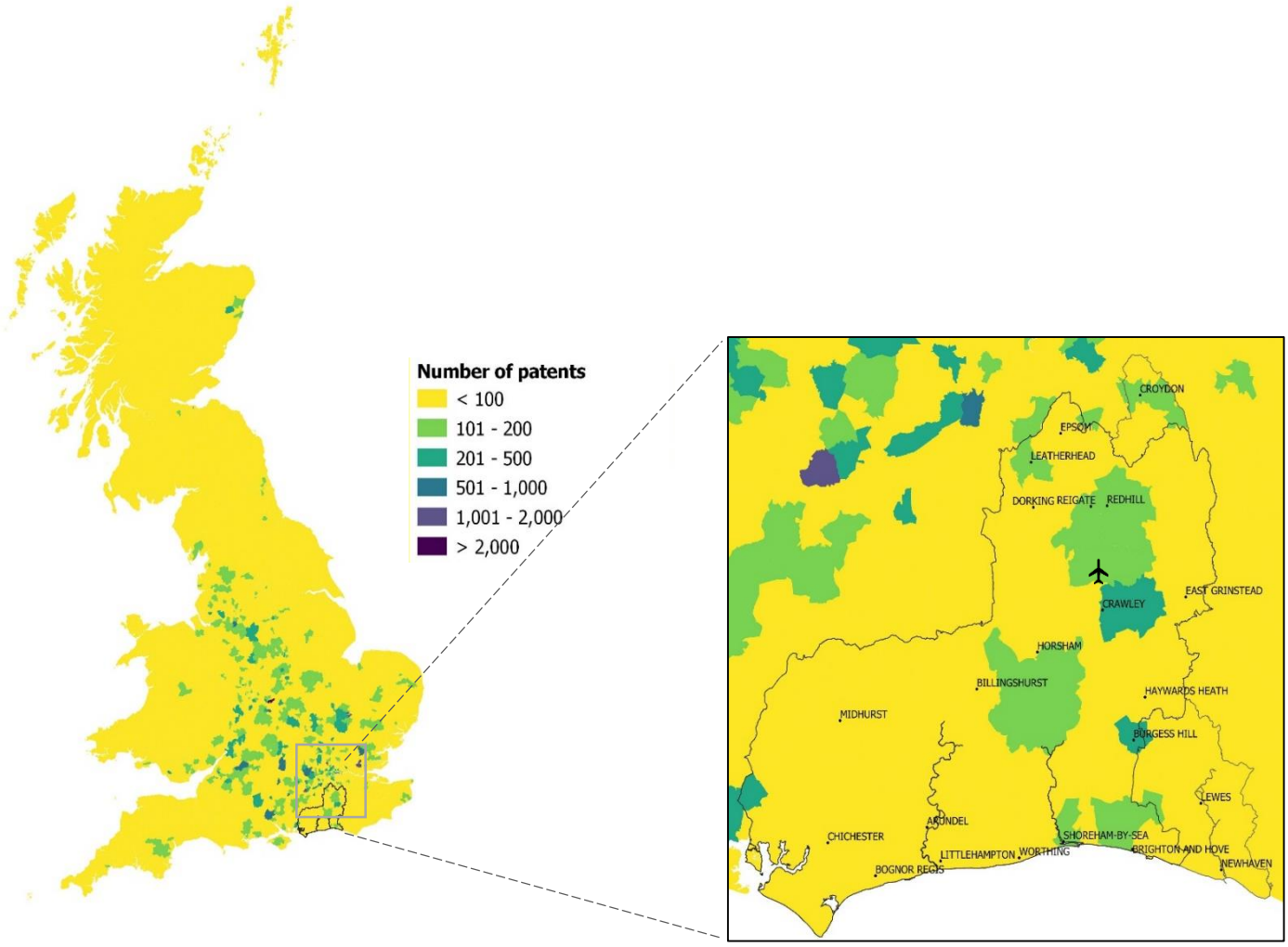


Figure 21: Spatial distribution of patents



Mapping the distribution of patents, those which have been filed between 1978 and January 2018, can provide insight into where the primary areas of research and development are. This map shows that patents filed have primary come from Brighton and Hove, Gatwick Airport, Burgess Hill and Shoreham-by Sea. However, these numbers are not substantial by any means, only ranging between 100-200 patents, with the remainder of Coast to Capital having fewer than 100.

Innovation Benchmarking – A UK Context

The Enterprise Research Centre (ERC) published a report providing innovation benchmarks for local areas in England. It is based on data from the UK Innovation Survey 2017 which surveyed 14,000 firms.

The benchmarks look at ten metrics under different themes:

1. **Organisational and marketing innovation**

- Firms engaged in introduction of new business practices
- Firms engaged in introduction of new methods of organising work responsibilities
- Firms engaging in marketing innovation

2. **Inputs and structure of innovation activity**

- Firms engaged in R&D
- Firms engaged in design
- Firms that were collaborating as part of innovation activity

3. **Outcomes from innovation**

- Firms engaged in product or service innovation
- Firms engaged in new to the market innovation
- Firms' sales of innovative products or services
- Firms engaged in process innovation

Figure 22 and table 5 show the performance of Coast to Capital compared to other places in the UK. The radar chart shows performance against each metric compared to the highest and lowest performing areas.

The black line shows the proportion of firms in Coast to Capital who answered positively for each metric. The light blue shape shows the proportion of firms answering positively in the lowest performing LEP, whilst the darker blue shape shows the proportion of firms answering positively in the highest performing LEP.

The table displays the proportion of firms carrying out the different activity under each metric and how Coast to Capital ranks against all LEPs.

Generally, Coast to Capital tracks the pattern of both the highest and lowest performing areas.

Figure 22: Innovation benchmarks (2014-16)

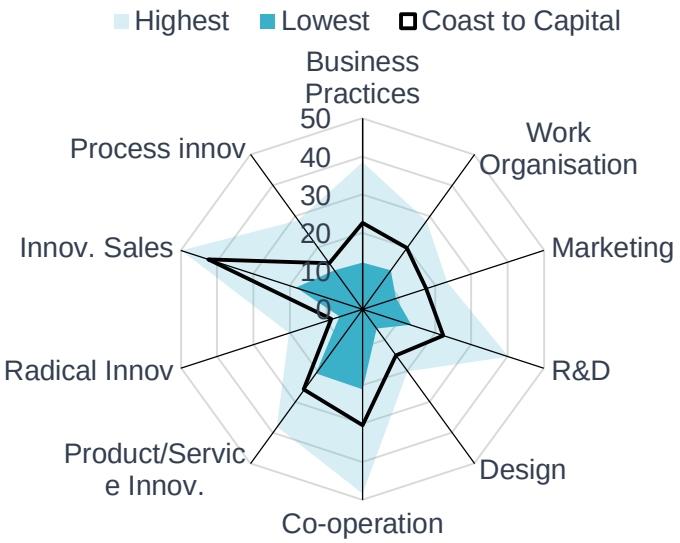


Table 5: Innovation Performance against metrics (2014-16)

	% firms	Rank
Introduction of new business practices	22.5%	28
New methods of work organisation	19.9%	19
Marketing innovation	17.5%	8
Undertaking R&D	22.2%	18
Undertaking design investment for innovation	15.0%	10
Collaboration for innovation	30.5%	24
Undertaking product of service innovation	26.1%	18
New to market product and service innovation	8.6%	22
Sales of innovative products or services	42.4%	7
Process innovation	14.8%	32

It is within the top 10 LEPs for three metrics; it performs particularly well for the sale of innovative products or services (over 42% of firms); it is ranked 8th for market innovation (17.5% of firms); it is 10th for undertaking design investment for innovation (15.0% of firms).

However, for a majority of the metrics, it is either mid-rank or in the lower half of the rankings. It is mid-rank for new methods of work organisation (19.9% of firms, Black Country is the highest performing with 28.5%) and undertaking product or service innovation (26.1% of firms compared to 38.1% in top performing Buckinghamshire). Just over 22% of firms undertake R&D, ranking Coast to Capital 18th. Oxfordshire ranked first (over 40% of firms).

The lowest rank for Coast to Capital (32nd) is for process innovation – 14.8% of firms compared to 28.8% in the top performer, Northamptonshire. It also falls within the lower half of the table for introduction of new business practices (rank 28), collaboration (rank 24) and new to market product and service innovation (rank 22).

Innovation Summary

The innovation ecosystem within Coast to Capital is particularly difficult to dissect with such a diverse economy. There are a lot of positives and strengths, ranging from the digital hub in Brighton that inspires entrepreneurship and encourages collaboration, to the advanced engineering and complex manufacturing R&D in Crawley. There are a high number of innovation firms and there is a particular strength in the sales of innovative products or services.

However, from the analysis of key innovation metrics and our consultation, there is a weakening of the innovation ecosystem. Given the amount of innovative businesses throughout Coast to Capital, there is a surprisingly lack of investment from government, education and the private sector. Despite Coast to Capital having the 7th most economically complex economy out of all LEPs, it does not seem to be fulfilling its potential. Higher Education Institutes have limited investment into any research projects and those that are sanctioned, do not relate strongly to the economy's sector strengths and are primarily concentrated in the Brighton area, leaving the rest of the LEP isolated.

Innovate UK funding is considerably lower in Coast to Capital than the surrounding LEPs, despite having considerably more businesses. Whilst companies have voiced opinions on the difficulties around this funding, there is still a huge gap between Coast to Capital and LEPs like EM3 and Solent. In addition to this, grants, staff involved in research in universities and patent fillings are all very low, even in the subject areas the LEP is strong in, such as emerging technologies or engineering.

Geographically, the Gatwick Diamond has great connections to London and a strong cluster of businesses, whilst the south coast too has a strong economy. However, the absence of high education, which are catalysts for research, is a strong indicator as to why so few academic research projects have occurred beyond the coastal regions. The absence of patents or aerospace research in the innovation metrics suggests a lack of activity overall in this sector. If this continues, there is a threat of firms moving to more prosperous regions.

Whilst there are limitations of the hard data, for example it does not consider the smaller areas of innovation (i.e. start-up companies and the creative arts sector), there are clear trends of an underdeveloped innovation ecosystem and a lack of investment. Our engagement with local businesses confirmed the hypothesis of an underperforming innovation ecosystem, supported by cases of firms moving their R&D out of Coast to Capital. There is a firm belief that it is difficult to develop large, industrial innovation without help.

We have assessed the key innovation metrics using the available data and interviewed major business and education institutes across the LEP area, bringing together a comprehensive understanding of the innovation ecosystem. The following section outlines the primary strengths of the LEP, alongside the challenges businesses are facing, that are limiting the innovation potential of Coast to Capital.

Key Assets and Strengths

The Digital Hub

The digital sector provides an annual turnover of £574m, with £88k turnover per employee. This contributes £528m to the local economy and is extremely valuable to both Coast to Capital and GB. This sector not only provides monetary value, but a cultural value also.

Brighton has a culture that is unique to the city. The collaboration comes from the multitude of small businesses, working and growing together. Many work in non-commercial businesses, rarely growing past 5-7 people, content with remaining small-scale. This breeds innovation and like-minded development, creating a hub for entrepreneurship within the city. Brighton has established a hub of digital services, ranging from emerging tech to gaming; a consequence of this working culture is the attraction of the right creative demographic to the city.

Coinciding with this culture, are various institutions which feed off the creative dynamic and provide an environment which encourages collaboration and innovation. Wired Sussex is a not-for-profit member organisation for digital media and tech businesses. It has 2500 businesses and freelance members, with 60 situated in Brighton. Whilst they are primarily small businesses, with an average of 7.2 employees, they also include Virgin and AMEX. It provides a technology hub with an emerging technology lab, open for aspiring businesses to use and develop products to take to market.

Digital Catapult have their main hub centred in Brighton, which includes support towards Wired Sussex's Fusebox. In 2017, they engaged with 638 startups and scaleups, 42 new industrial collaborations and 31 new academic engagements. Digital Catapult partners with a range of companies to undertake collaborative research and R&D and offer contracted R&D services to undertake commissioned research.

There have also been two research projects, Brighton Fuse 1 & 2, based on the concept of combining high-growth businesses in the creative sector with technological expertise. These reports found that freelancers tend to explore and utilise cutting edge technologies more frequently than traditional businesses, displaying high levels of innovation. Brighton provides the platform to enable this, encouraging the birth of new business ideas.

The University Presence

In the south of Coast to Capital there are three research focused universities; University of Brighton, University of Sussex and Chichester University. Each of these universities has their own research base, vastly differing from one another, but each remaining as important hubs for innovative activity.

The University of Brighton, whilst having a reputation for digital, also works in the biotech sector. It is currently establishing a network across 50-60 companies and working on a proposal for a med-tech innovation site and research facility.

The University of Sussex is home to Sussex Innovation Centre; this has a student enterprise foundation who directly work with start-ups to identify clear business opportunities that require investment. It heavily supports student led businesses and helps retain graduates within the local area.

The University of Chichester has a state-of-the-art film and sound studio, attracting expertise in digital film, animation and editing. Despite the lack of STEM based research, there are still relationships forming with companies who have engaged with the university to utilise the animation and film infrastructure.

The Young People

There are significant clusters of young people throughout Coast to Capital that represent an extremely opportunistic demographic. The results of our cluster analysis [Figure 9] highlighted a contingent of ‘young urban renters’ across the south coast in Brighton, Shoreham, Littlehampton and Chichester. Smaller clusters were found in Redhill, Horsham and Crawley, but these are much smaller numbers.

This demographic represents young people who have likely graduated from a university, have the skills local businesses require and are looking for work. They will gravitate towards areas that have the type of social infrastructure they want, the leisure activities for their lifestyle and cities with a ‘buzz’. With a strong, young contingent, particularly around the south coast, Coast to Capital has a strong core population that can positively contribute to the economy.

Connectivity

In addition to a strong demographic base, there is a established connection from London down to Brighton. This provides a strong commuting link for those who want to live within Coast to Capital and work in the city, but also provides a great opportunity to link somewhere like Brighton to the Gatwick Diamond. This connectivity enables knowledge sharing and links between different places, with great potential for collaboration across place.

The Economy

Coast to Capital has a successful and strong economic foundation. Our analysis has identified an extremely productive and complex economy, there are key specialisms in advanced engineering and manufacturing, creative, digital and information technology, finance and professional services and health and life sciences. Businesses range from global to start-ups, clustering in various areas around the LEP, providing opportunity to build on these economic specialisms and continue the work that has established Coast to Capital as intrinsic to the UK economy.

Challenges

The R&D Problem

Whilst there is a healthy economy, displaying impressive signs of productivity, there is a clear sign of a degrading innovation ecosystem. There is low investment from higher education, government but also, surprisingly, private sector investment. Despite having a higher number of innovation firms than the national average, businesses are investing less in R&D and are receiving much less funding than other LEPs in the South of England. Consequently, a low number of research projects, grants and patents are submitted, pointing towards a lack of university activity. The data also shows a very low number of projects relating to the economic specialisms in academia, suggesting a lack of engagement between the universities and local businesses.

From our engagement, the R&D being undertaken in businesses across Coast to Capital varies massively from business to business and place to place. In Manor Royal Business Park some major, global businesses have experienced their R&D facilities being moved from Crawley to overseas, whilst others have decided to locate their manufacturing elsewhere due to high cost of land in the LEP area. There are further instances where funding has been withdrawn or R&D has simply ceased.

Despite the presence of numerous global engineering firms, there are only a handful of companies undertaking innovative research activity, suggesting a hollowing out of some industries and a lower amount of R&D than initially believed. Whilst our engagement brought challenges to the core innovative metrics, there has been a universal recognition that the innovation ecosystem is reliant on only a few big businesses and an acceptance that collaborative action should be taken in order to address this.

Space & Premises Constraints

The issues with space and premises are split across the three areas within Coast to Capital

Brighton
There is a notable lack of space in Brighton. Whilst there is an abundance of incubators and start-ups, these companies only require small spaces or work remotely. If businesses do wish to scale, they struggle to find the space to expand. Residential blocks are replacing office units whilst vacancy rates are low, locking up many sites. With this demand, the average office rent prices have increased and there are fewer sites that are either available or affordable for any commercial development.

Rural Areas
There is space within rural areas, however there is a lack of demand, particularly in West Sussex. Many businesses want to be located within a city centre with access to resources and talent, or in a cluster of businesses. Much of the land is agricultural or protected, therefore development for business is either unlikely or not commercially worthwhile to construct industrial or office-based units.

Gatwick Diamond
There is limited space within the Gatwick Diamond. Within Gatwick Airport, the business must directly benefit the airport to be based there. In Manor Royal Business Park, space is maxed out and there is no room for expansion. Whilst there is potential for co-working space, any industrial development is too expensive for companies to consider. Similarly to Brighton, rents are increasing and there is a lack of viable development land, particularly with the limited amount of high quality industrial space.

Identity, Place & ‘Clone Town Syndrome’

Many prosperous areas in the UK have a strong identity, whether they are known for their digital technology, artistic creativity or engineering, they are tied with a strong sense of place. One of the primary challenges Coast to Capital faces, is creating an identity that will attract a young, ambitious demographic.

We have identified the primary operating economies within Coast to Capital: Brighton, the Gatwick Diamond and the South Coast Corridor. Each of these areas has a very different identity to the other, something that is both an asset and a challenge. The identity of Brighton is well documented and is a strong driver, particularly for young people. The digital hub also attracts innovation. The same cannot be said for the remaining economic areas.

The South Coast corridor, whilst having vibrant towns like Chichester, does not have a unique selling point. It is attractive for those wishing to make the move from London to the coast, for a cheaper cost of living and likelihood of raising a family. In terms of the economy and innovation ecosystem, it does not have one distinct area of business. This limits any form of progress; businesses want to move to innovative hubs, cities or urban districts, to engage with other businesses and access a talent pool.

'Clone Town Syndrome' references the New Towns Act of 1946, where 27 new towns were built, including Crawley and Milton Keynes. These new towns have a lack of distinct features or characteristics, being inherently similar to one another, hence the term ‘clone town’. A handful of these towns are working hard to change their identity; Milton Keynes for example is one of the fastest growing cities in Europe and the 8th most active city in the UK for innovation. It is now establishing its very own specialist university, MK:U.

Identity is a critical factor in attracting a young demographic, therefore towns and cities lacking social infrastructure will suffer. Crawley, despite its strategic location within the Gatwick Diamond and the proximity to London, is experiencing this exact problem and has not developed the same way as Milton Keynes. Whilst there are innovative businesses undertaking challenging and impressive work, Crawley’s identity of ‘place’ means fewer people want to move there to live or work. A significant change of infrastructure and culture is required in order to present Gatwick Diamond as an attractive place to live and work.

Skills shortage

One of the primary conclusions from our engagement was a clear shortage of talent, for both the small, local companies and the major, global players with an established business.

It is not only manufacturing and engineering businesses that are experiencing significant recruitment problems for their technical roles, but numerous sectors expressed difficulties around attracting the right calibre of employee.

The recruitment of young professionals is one of the key challenges for many businesses. Whilst there have been successes in apprenticeship programmes, many companies throughout Coast to Capital are struggling to attract graduates coming out of university, identifying the ‘appeal of London’ as the limiting factor.

Part of this relates to the particular attractiveness of a place; areas that do not have the urban infrastructure or leisure activities that young people traditionally seek, are notably struggling. For example, there are clear differences between places like Brighton or Chichester when compared to Crawley.

Nationally, there is a shortage of certain skills, such as electrical engineers. However, regionally within Coast to Capital, it is the shortage of advanced technical skills, senior experience and young professionals, that are resulting in long-term vacancies. These vacancies are forcing companies to turn towards apprenticeships as the primary method of recruitment.

Lack of open-door policy

Whilst Brighton is the model for collaboration amongst start-up companies, there is a struggle for smaller businesses to engage with larger corporations. Speaking to SMEs within the Coast to Capital area, many find a lack of an open-door policy when it comes to engaging with bigger businesses, whether it is related to skills, workspace or shared innovation.

This is not solely related to businesses, but universities too. For example, the University of Chichester suffers a disconnect from both the Universities of Sussex and Brighton, with academics struggling to engage locally. University funding is under pressure to deliver more for less, therefore funding any external SMEs is difficult due to the risk around investment. An example of this is the medical-tech outpost of University of Brighton, located in Manor Royal Business Park. This failed because it was only an office that very few used and little effort was put into reaching out to the surrounding businesses to engage in joint ventures.

Multiple businesses have expressed challenges around engaging with the Universities of Brighton and Sussex, citing there is a lack of support or desire to work together. Universities should be central to innovation, but there is a recognition they need to all improve at reaching out to engage with the local community.

Our consultation suggests that if external engagement was prioritised by a university, there is an opportunity for a collaboration piece, with businesses in Crawley stating a clear desire to work with higher education.

The London Effect

There is a strong demographic of young urban renters and young families in Coast to Capital, with strong infrastructure connections from London to the coast. However, this can be to the detriment of the LEP. Whilst close proximity to London can provide an economic opportunity, it is a clear commuter route for many residents who want the lifestyle of the south coast but the wages in London. In the north of Coast to Capital, areas like Redhill and Epsom experience a large amount of commuting out to London. It is a barrier for areas wanting to attract young people, taking many talented young graduates straight from the universities in Coast to Capital into the city; ‘The London Effect’ is a problematic talent drain.

Summary

Coast to Capital has a strong economy. It is the 7th most economically complex and productive LEP in GB, with high value sectors which include air transport, advanced manufacturing and creative, arts and entertainment. It is an extremely diverse economy, varying from the advanced manufacturing in Manor Royal in Crawley, down to the creative, digital sector in Brighton and across to the agricultural industries.

However, despite the strong economic backbone and a seemingly successful innovation ecosystem, the data and consultation suggest that R&D is not as prevalent as first thought. The data points towards a lack of funding from universities, government and private investment, whilst the consultation has uncovered companies experiencing R&D moving elsewhere or being generally underdeveloped. Universities are disengaged with local businesses and, other than within Brighton, there is no platform to support innovation or encourage business collaboration.

Coast to Capital, as a place, mirrors the complexity found within the economy. The culture within Brighton, the Gatwick Diamond and the south coast are extremely different, consequently making it difficult to define the LEP as one distinct 'place'. Furthermore, areas like the Gatwick Diamond are struggling to instil a unique identity, impacting the attractiveness of the area and therefore affecting the talent pool that local businesses rely on. Our engagement shows that companies outside of Brighton are experiencing a severe skills shortage, struggling to fill vacancies, recruit graduates and attract young people. The proximity of London exacerbates this, with the northern part of Coast to Capital acting primarily as a commuter hub.

There is not only the challenge of a struggling identity across Coast to Capital, but an issue of available infrastructure. Whilst the LEP are is relatively well connected, it cannot offer adequate premises or space for businesses. For instance, Brighton is growing in popularity; it is a hub for start-up companies, however they struggle to expand due to unavailability of office spaces, as the city instead caters for the growing resident population. The cost of office space, industrial units and land is high across much of LEP area, with some companies choosing to move elsewhere to expand.

These issues of R&D investment, skills, identity and premises have been acknowledged throughout our engagement. These challenges are threatening both the economy and the innovation ecosystem within Coast to Capital, without action there is potential that companies will leave and the economy will weaken. Businesses are willing to work together to address these problems, however they require a clear vision in order to do so. The Coast to Capital economy is extremely important to GB and without addressing these problems, any impact on the local economy is likely to have an adverse effect nationally.

Appendix

Standard Industrial Classification (SIC) codes

SIC codes classify business establishments by the type of economic activity that they engage in. This is a standard framework for collection, tabulation, presentation and analysis of data. The framework structures economic activity by different levels using a numerical system of labelling. The table below sets out the structure in more detail with an example:

Level	Code	Example
Section	Letter	C Manufacturing
Division (SIC2)	Integer	10 Manufacture of food products
Group (SIC3)	Integer with 1 decimal point	10.1 Processing & preserving of meat & production of meat products
Sub-group (SIC4/5)	Integer with 2-3 decimal points	10.11/10.110 Processing & preserving of meat

Within each section (broad sector groups), there are a number of divisions; within each division, there are a number of groups; and within each group, there are a number of sub-groups. With each lower level, there is greater specificity and granularity around the nature of the economic activity.

SIC codes at any level can be combined to create bespoke sectoral definitions, where activity in a sector may be spread between multiple sections or divisions.

Strengths and limitations
The structure of SIC codes enables detailed analysis into specific sectoral strengths. In this report, SIC2 codes have been selected, as these are detailed enough to give a sense of distinctive strengths in the economy, but are still relatively high level and broad enough to be clearly linked back to sectors. SIC5s have been selected for the more in-depth analysis into specific sub-sectoral specialisms, as these are the most detailed and granular level available. SIC codes are well designed to capture and categorise economic activity in established sectors, such as manufacturing. One of their main limitations is their ability to capture activity in new, growing or rapidly evolving sectors, such as digital, creative or energy, as the classifications are not detailed enough.

Another limitation is that many sectors interlink, but this again is hard to capture by SIC code. For example, a key part of agri-food is logistics, but the current structure of SIC codes mean that without using a model, it is impossible to identify the number of jobs in logistics related to agri-food, as opposed to other forms of production.

This is where it is helpful to draw on specific strands of research or qualitative evidence from engagement with businesses.

Sector Specialisms

Location Quotient (LQ) analysis is used to understand specialisation patterns in the sectors in a local economy. In this context, specialisation refers to the concentration of a specific industry in the local economy relative to the country as whole.

LQs are ratios for each sector between the local share of employment and share of employment in GB. GB is assigned an LQ of 1.0 and the local economy is compared against this. Higher LQs correspond to higher levels of specialisation, with an LQ above 1.0 indicating that the area is *more specialised* in that sector than GB as a whole.

The high LQ values in table 1 display the top 20 specialist SIC2 sectors. This analysis identifies sectors and sub-sectors which the local economy has a distinctive and unique strength in. This is a key piece of analysis since building on existing sectoral strengths is likely to increase the chances of economic success.

We identified that Coast to Capital is specialised in a range of advanced and high value sectors: advanced engineering and manufacturing; creative, digital and information technology; financial and professional services; and health and life sciences.

SIC5 Sub-Sectors

We can drill down into this analysis further, assessing the next level of sub-sectors – SIC5. Below is a table listing the top 20 SIC5 codes, ranking according to their LQ score. Please note than the SIC2 table in the report is based on sub-sectors that have over 1000 jobs, SIC5s are based on over 500 jobs due to the nature of the smaller, more niche sub-sectors; this is considered a high number of jobs at this SIC code level.

	SIC5 sub-sector	LQ	Jobs
1	Manufacture of irradiation, electromedical and electrotherapeutic equipment	13.50	1,500
2	Wholesale of watches and jewellery	9.98	1,750
3	Operation of rail passenger facilities at railway stations	8.55	600
4	Manufacture of soap and detergents	6.41	900
5	Non-scheduled passenger air transport	6.17	1,875
6	Service activities incidental to air transportation	5.34	6,500
7	Scheduled passenger air transport	5.21	7,500
8	Manufacture of consumer electronics	5.03	500
9	Credit granting by non-deposit taking finance houses and other specialist consumer credit grantors	4.91	4,250
10	Life insurance	4.22	3,500

11	Manufacture of bodies for motor vehicles (except caravans)	3.95	600
12	Wholesale of flowers and plants	3.71	650
13	Wholesale of other intermediate products	3.46	1,375
14	Manufacture of electronic instruments and appliances for measuring, testing, and navigation	3.41	3,750
15	Tour operator activities	2.80	2,000
16	Wholesale of grain, unmanufactured tobacco, seeds and animal feeds	2.77	550
17	Distribution of gaseous fuels through mains	2.74	800
18	Holiday centres and villages	2.52	1,500
19	Ready-made interactive leisure and entertainment software development	2.38	750
20	Other processing and preserving of fruit and vegetables	2.38	1,250

The LQ codes are generally much higher and therefore more specialised than the overall GB values, primarily because they are much more specific economic sectors. This can also help inform why particular SIC2 sub-sectors are so specialist.

For example, Air Transport has is the highest SIC2 LQ value at 5.28. In the table above, there are three sub-sectors related to Air Transport that are 5x more specialised than GB: Non-scheduled passenger air transport, service activities incidental to air transportation and scheduled passenger air transport.

Similarly for the SIC2 Manufacture of computer, electronic and optical products, which has an LQ of 2.6, this can be reflected in the SIC5 LQ analysis. The Manufacture of irradiation, electromedical and electrotherapeutic equipment has the highest LQ, 13.5 times more specialist than GB, showing an extremely high strength in this sector. Combining this with the Manufacture of consumer electronics (5.03) and Manufacture of electronic instruments and appliances for measuring, testing, and navigation (3.41), represents the strength in this sector

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