

The Design Economy

The value of design to the UK



Preface

Great design can change lives, communities and organisations for the better. It can create better places to live, bring communities together, and can transform business and public services. Design is a way of thinking that helps small, medium and large organisation alike, social enterprises and charities change the way they work.

Design Council has championed the contribution and importance of design since 1944. Our research is a vital way to assess the value of design and this provides an up-to-date, robust and holistic account of the current value of design in the UK.

This report is the most comprehensive account of design's contribution to the UK economy. Building on our previous research in 2005, 2008 and 2010, it takes a wider definition of design by analysing the Office of National Statistics' data to better understand the value of design across the UK economy. This report therefore looks at what we define as the 'design economy'.

The design economy refers to value created by those employed in design roles in a wide variety of industries – from design-intensive sectors, such as web design or animation, to designers and design-engineers in automotive or aerospace companies. This means for the first time we have included sectors where design is used, but is not the prominent identity. This includes sectors such as architecture and built environment which includes civil engineers and those involved in town planning, all of whom use design in different ways. This has had a noticeable impact on not only the value design contributes to the wider UK economy, but also on the make-up of the design economy.

Our research has assessed the contribution of design to the UK economy using a set of key measures, including gross value added, productivity, turnover, employment and exports of goods and services. This includes a summary of how design contributes to the financial performance of businesses, the regions and areas where design makes a substantial contribution to local economies, as well as design workforce demographics.

It shows, among many other things that design contributed £71.7bn to the UK in 2013, employed 5% of the UK workforce and created jobs at three times the national average. This shows that as a discipline, design benefits and permeates across all aspects of life in the UK.

Our broader approach to assessing the impact of design has also revealed some other interesting patterns. In particular, the inclusion of engineers and the digital sector has highlighted a gender imbalance across the design economy, with almost eight out of ten designers being male. This presents a challenge for the design economy and the UK more widely if we are to continue to prosper, suggesting that further work is required to increase the pool of talent and the flow of ideas.

Design Council is committed to supporting the great work happening across the design economy and to addressing the challenges highlighted in this report – whether through encouraging clusters of design outside London, or helping to redress the gender imbalance. We look forward to exploring solutions with our partners in business, government and civil society.

We hope this report proves useful and informative. It was authored and designed by Design Council. We also thank staff at BOP research and Trends Business Research for designing and conducting the research featured throughout.

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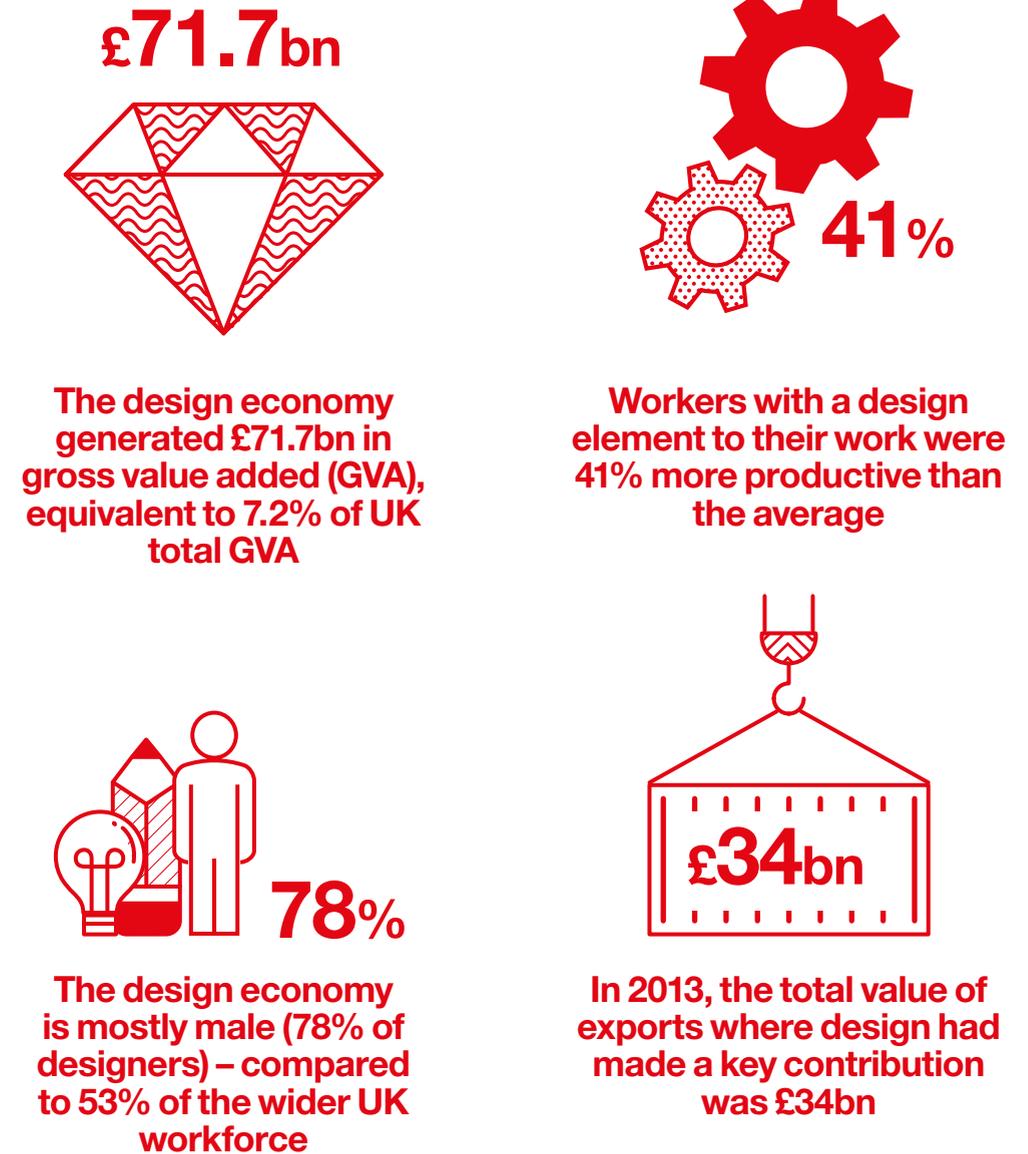
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Executive summary

The Design Economy is the first piece of research to consider the contribution and value of design across the whole UK economy, rather than design as a single industry.

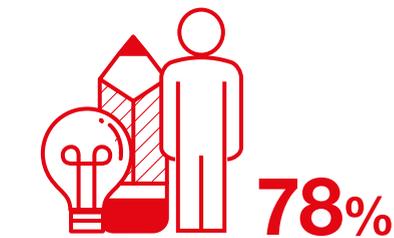
This report draws on an in-depth analysis of data from the Office of National Statistics and international sources. It contains useful learning in the contribution design makes to the UK, its potential and the challenges to be overcome, for central government and other public agencies such as local authorities and Local Enterprise Partnerships.

Figure 1:
The design economy in numbers



The design economy generated £71.7bn in gross value added (GVA), equivalent to 7.2% of UK total GVA

Workers with a design element to their work were 41% more productive than the average



The design economy is mostly male (78% of designers) – compared to 53% of the wider UK workforce



In 2013, the total value of exports where design had made a key contribution was £34bn

➤ Key findings

The design economy means business

Our research reveals for the first time the major contribution design makes to the UK. It shows that in 2013:

- The design economy generated £71.7bn in gross value added (GVA), equivalent to 7.2% of UK total GVA
- Furthermore, between 2009-2013 the design economy GVA grew at a faster rate than the UK average
- Workers with a design element to their work were 41% more productive than the average. Each delivers £47,400 in output (GVA per worker) compared with £33,600 across the rest of the economy
- Our research also shows that for those who invest in and use design strategically (though don't necessarily have a large proportion of designers in their workforce), the average output per employee is greater.

This research highlights a dynamic movement which both means good news for the UK.

Boosting productivity and rebalancing the economy through design

The wider lens used for our research shows the true value of design to the UK, and its use and value across sectors and across the country. However, more could be done to maximise the benefits and value of design. We have found:

- Some sectors of the UK economy have fully embraced the power of design. For example, by concentration, designers account for 21.7% of the workforce and 23.6% of the wage bill in the information and communication sector
- The design economy is concentrated in London and, to a lesser extent, the South East of England. More than one in five design workers, and one in four design-intensive firms (where 30% or more of the workforce were employed in design occupations), are found in London. This report highlights the benefits these regions experience as a result of design, particularly in terms of higher GVA, productivity and exports
- There are emerging clusters of design in a number of local authorities outside London, where the number of firms and employment in design is growing. Despite this movement however, design still remains relatively less important to these local economies than in other areas.

As the UK looks to boost productivity and rebalance the economy, this research suggests there is a major role for supporting the increased use of design across the country and across certain sectors.

From world class to world leading

Our research looked at the contribution of design to the export of goods and services, rather than just the export of design services as measured in government data. It shows that whilst UK design is in demand, there is still room for improvement to become world leading:

- In 2013, the total value of exports where design had made a key contribution was £34bn. This constituted 7.3% of total UK exports in 2013
- Despite impressive exports, the total value of UK design exports ranks fifth behind Hong Kong, Switzerland, Italy and Germany
- Although UK design registrations are considerable, the absolute number of design registrations decreased between 2002-2011. This highlights there is still room for improvement before it catches up with countries such as South Korea and Australia, which top the rankings in World Intellectual Property Organisation design registrations.

There is still some way to go before the UK design economy re-establishes itself as the best in the world. With further investment and support, it could move from being world class to the global lead.

Making the design economy more diverse

More could be done to improve the diversity of the design economy and make the best use of available talent. Our research found:

- The design economy is mostly male – 78% of the designers are male (compared to 53% of the wider UK workforce)

- The design economy compares more favourably to the wider UK workforce in terms of designers from ethnic minority backgrounds (11.2%) and those who have a disability or work-limiting illness (11.7%).

For the design economy and the UK to continue to prosper, it is essential that we bring a more diverse range of people into design careers to capitalise on the wealth of talent that exists in the UK and beyond.

What next?

The Design Economy shows the breadth and depth of design's contribution to the UK. Design Council is committed to championing the role and importance of design, as we believe it can deliver growth, efficiencies, quality, sustainability, better quality of life and stronger communities. Much of this is evidenced in this research.

Going forward, we will be exploring the following questions with government, our partners in business and civil society.

- How can the UK move from being world class, to being the world leading in design?
- How can we spread design skills more widely across sectors where design is underused?
- How can we spread design skills more widely across the country and encourage clusters?
- How do we improve the diversity of design to take more advantage of the talent in the wider workforce?

Design Council will examine the benefits of conducting this research on a more regular basis, including 'deep dives' into particular sectors and topics. We look forward to contributing further evidence on the value of design and promoting the benefits of design for everyone.

Introduction

This report is the first to consider design as a discipline that cuts across the whole UK economy, rather than as a single industry, valuing the full spectrum of design, from human-centred design through to technical design.

- **Human-centred design:** where the process of design begins with the people being designed for and ends with solutions tailored to meet their needs
- **Technical design:** where the process is around the design and specification of an item, component or system

For the first time, we are able to value the scope of and value created by those employed in design roles regardless of the industry in which they work, in combination with all of those working in industries sufficiently design-led as to be considered ‘design industries’.

Method

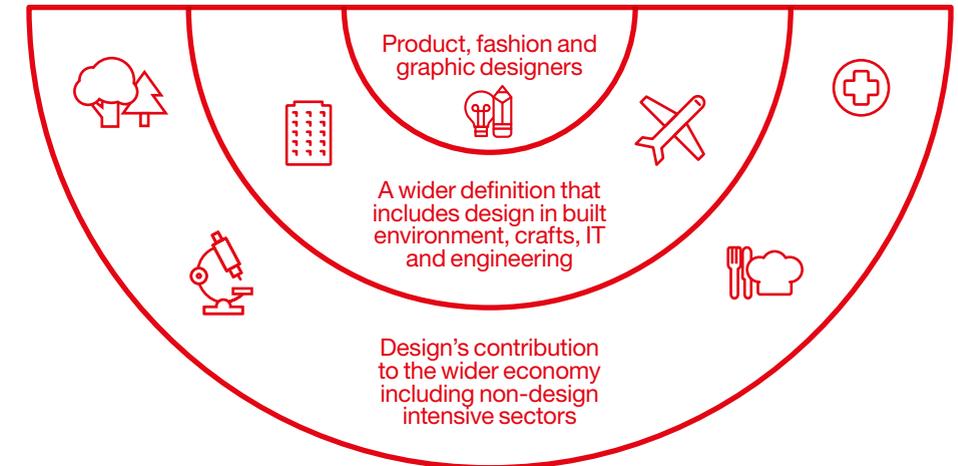
Most of the analysis in this report has been prepared using a methodology which makes best possible use of existing secondary data from the Office for National Statistics (ONS).¹ This has enabled Design Council to express an up-to-date, robust and holistic account of the current value of design in the UK. We have also included detailed analysis of international data.

The majority of previous research in the direct economic value of design has been undertaken by Design Council, Creative & Cultural Skills or as part of the Department for Culture, Media and Sport’s (DCMS) Creative Industries Economic Estimates. Creative & Cultural Skills and DCMS have drawn upon data from the ONS using standard industrial and occupational

classification codes. In the past, Design Council has followed broadly the same approach, but tended to accompany this with primary research.

This time, Design Council has selected a design definition and methodology that is practical, robust and replicable, making best use of existing secondary data and aligning us much more closely with the DCMS approach. This removes the previous reliance on primary research, which was more costly and limited in coverage, and allows the direct impact of design to be understood within the wider economy.

Figure 2: Broader definition of design



¹ The core datasets used include: Annual Business Survey (ABS), Annual Population Survey (APS), Inter-Departmental Business Register (IDBR), International Trade in Services Survey (ITIS), UN Commodity Trade Statistics (Comtrade)

➤ Defining design

Design is most often defined using a textual description that emphasises its broad spectrum as a creative methodology for many purposes. The Cox Review (2005) defined design as “what links creativity and innovation”. It shapes ideas to become practical and attractive propositions for users or customers. Design may be described as creativity deployed to a specific end.”² We built on the Cox definition of design to be more specific for this research.

What is design?

Design is the creation of a proposition in a medium, using tools as part of a process. While all design is innately creative, the nature of each element has the potential to differ between different types of designers:

- Proposition** may be objects that are visible (a building, a dress, a kettle) or invisible (software code, policy, process).
- Medium** may take various forms. For example: physical (pencil sketch, 3D model, painting); spatial (a building, a street grid); digital (computer game, app, sound); or temporal (a process or sequence).
- Tools** may vary (whether a pencil, a knife, a keyboard) in creative and reflective/analytic modes.
- Process** may include one or more means of design inspiration and design review, working alone or in collaboration with others.

As a discipline applied in various contexts, it is challenging to place boundaries around design. However, it is necessary to do so in order to deliver this type of economic analysis. The approach we have taken to identify design activity in the UK economy follows that used by DCMS in the production of the UK’s Creative Industries Economic Estimates,³ which was adopted following detailed research on approaches to mapping the creative industries by Nesta.⁴ This involves the following two steps:

1. Identify designers

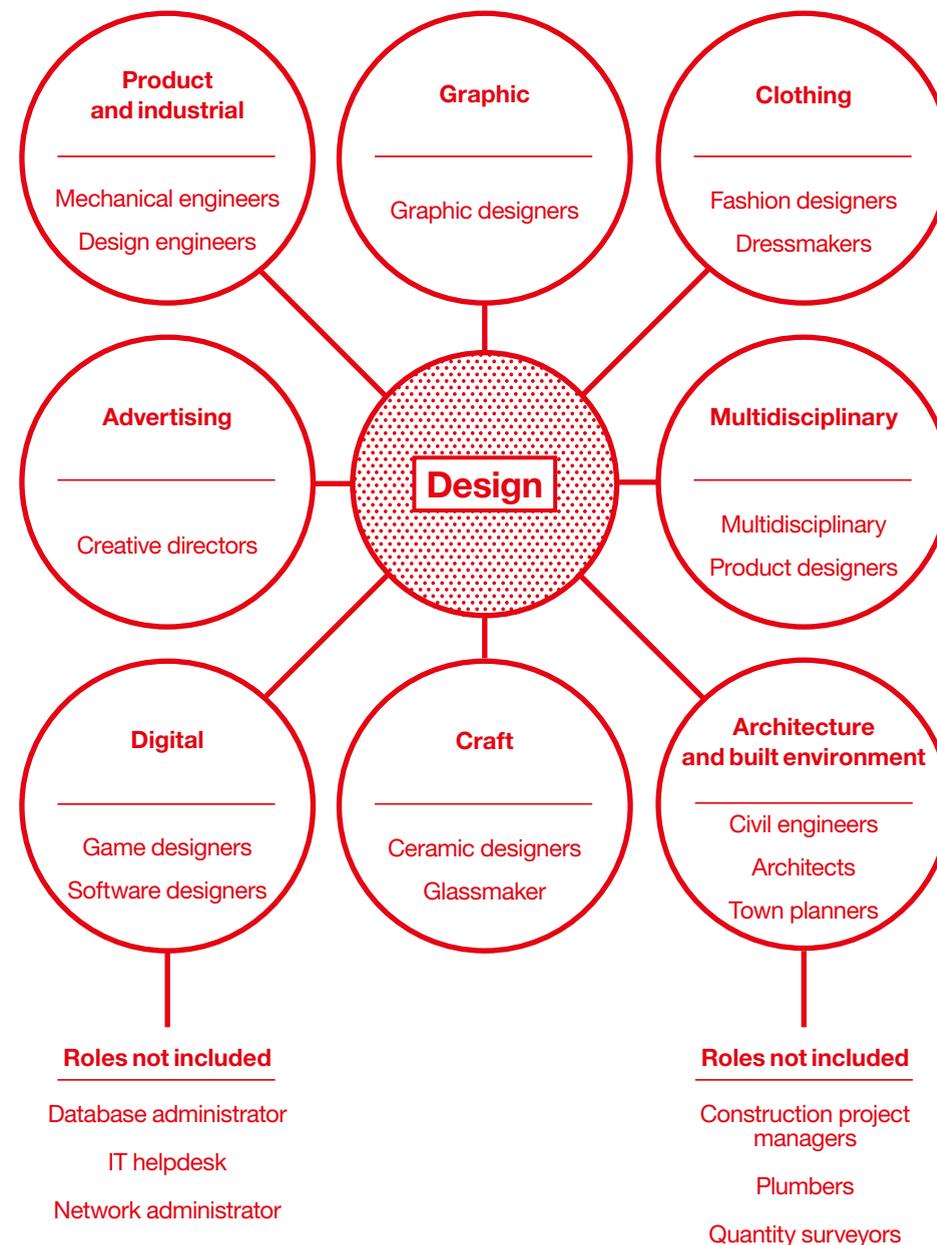
To identify the occupations of those working in design, we reviewed a range of existing literature and consulted with key stakeholders across design. Using these outcomes we worked through a process of review and selection of best fit Standard Occupational Classification (SOC) codes to identify designers within ONS data, who are counted in the analysis regardless of the industrial sector they work in.

² Cox, G. (2005) Cox Review of Creativity in Business: building on the UK’s strengths. webarchive.nationalarchives.gov.uk/20130129110402/hm-treasury.gov.uk/d/Cox_review-foreword-definition-terms-exec-summary.pdf

³ Department of Culture, Media and Sports. (2015) Creative industries economic estimates gov.uk/government/collections/creative-industries-economic-estimates

⁴ Nesta. (2012) A Dynamic Mapping of the UK’s Creative Industries nesta.org.uk/publications/dynamic-mapping-uks-creative-industries

Figure 3:
Examples of design occupations



2. Identify design intensive industries

The next step involves identifying which industries can be classified as ‘design-intensive’. We used the design occupations identified in step 1 to calculate the intensity of design employment in industries (individual Standard Industrial Classification – SIC – codes). The intensity is the proportion of people employed within an industry that are working within one of the design occupations. As per the DCMS/ Nesta method, any industry with a design intensity of 30% or above is considered to be a design industry. All employment within a design industry is included in the analysis, on the basis that those employed in non-design roles will be supporting the core design function.

This allows us to identify designers that are working in design-intensive sectors, but also the large number of designers working in sectors across the UK economy. Throughout the report, the findings of the research are represented by these three categories and broken down by design subsector.

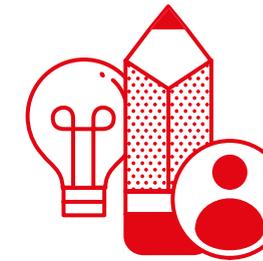
- 1 Designers in design industries (eg, digital design, architecture and built environment)
- 2 Other roles in design industries (eg, support functions such as administration, finance, distribution)
- 3 Designers in other sectors across the economy (eg, aerospace, finance, retail, etc).

Table 1: Design intensive industries

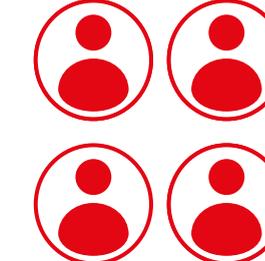
Design sub-sector	SIC	SIC description	Example design business
 Architecture and built environment	71.11	Architectural activities	Building design and drafting, eco design
 Design (clothing)	14.19	Manufacture of other wearing apparel and accessories	Accessories
 Design (craft)	23.41	Manufacture of ceramic household and ornamental articles	Ceramic tableware
	32.12	Manufacture of jewellery and related articles	Jewellery or watches, production of precious stones
 Design (digital)	58.21	Publishing of computer games	Computer game design and publishing
	58.29	Other software publishing	Software publishing
	62.01	Computer programming activities	Designing structure and content of software, user interface design
 Design (multidisciplinary)	74.10	Specialised design activities	Fashion design, sustainable design, industrial design
 Design (product/industrial)	16.29	Manufacture of other products of wood etc.	Furniture design
	26.40	Manufacture of consumer electronics	Electronic home entertainment equipment

Figure 4:
The design economy

Design industry

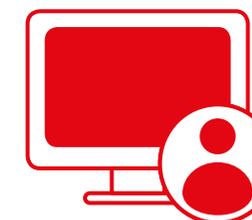
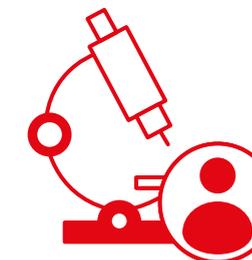


Designers in design industries



Other roles in design industries

Designers in other sectors



In some cases the nature of the data used is such that it can only account for activity within businesses. In these instances, we are only able to provide data on design-intensive sectors (in figure 4 and those activities and subsectors listed in Table 1). Where this is the case, it is clearly noted.

An unfortunate feature of the UK SIC and SOC systems is that two codes exist that capture a range of design activity. The formal description of each code is provided below:

– **SIC 74.10 Specialised design activities:**

“This includes: fashion design related to textiles, wearing apparel, shoes, jewellery, furniture and other interior decoration and other fashion, goods as well as other personal or household goods, industrial design, ie, creating and developing designs and specifications that optimise the use, value and appearance of products, including the determination of the materials, mechanism, shape, colour and surface finishes of the product, taking into consideration human characteristics and needs, safety, market appeal in distribution, use and maintenance, activities of graphic designers and activities of interior decorators.”⁵

– **SOC 3422 Product, clothing and related designers:**

“Product, clothing and related designers plan, direct and undertake the creation of designs for new industrial and commercial products, clothing and related fashion accessories, costumes and wigs, and for building interiors and stage sets.”⁶

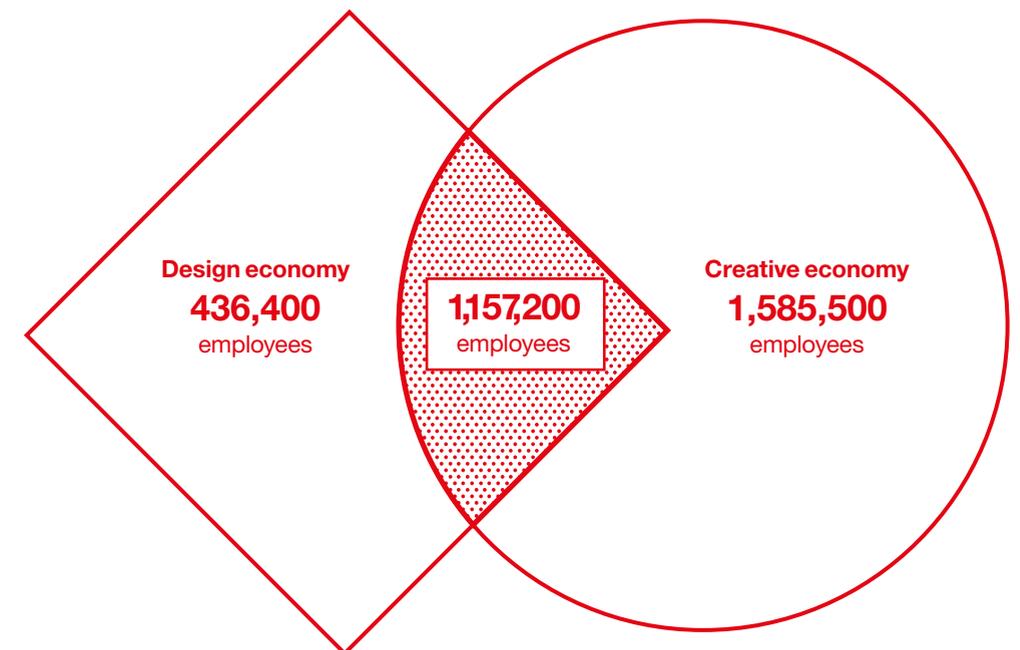
It is not possible to break out activity within each of these groups and allocate to the appropriate subsector. This has necessitated the inclusion of the design (multidisciplinary) subsector. The important point here is that it is not necessarily the designer or the business itself that is multidisciplinary, but the subsector as a whole.

➤ Alignment with other research

The definition of design used in this project is a brand new approach to articulating the impact of the design economy as a whole. While previous research from Design Council and concurrent research from organisations such as the DCMS (eg, the Creative Industries Economic Estimates) use broadly similar methodological approaches, their definition of design tends to focus on a much narrower band of design activities as part of the creative industries. This report moves design on from being one facet of the creative industries to being a creative discipline in its own right that cuts across the UK economy.

The research finds that there is a large area of overlap between the design economy and the creative economy measured by the DCMS. There are 1.16 million people employed in the design economy who are also captured in the DCMS’ creative economy, plus an additional 436,400 employees⁷ as illustrated in Figure 5. A more detailed exploration of how the two studies overlap is included in Appendix 1.

Figure 5: Overlap between employment in the design economy and creative economy



Source: ONS (2014) Annual Population Survey 2013

⁵ ONS (2009) UK Standard Industrial Classification of Economic Activities 2007 (SIC 2007) Structure and explanatory notes

⁶ ONS (2010) Standard Occupational Classification 2010. Volume 1: Structure and descriptions of unit groups

⁷ ONS (2014) Annual Population Survey 2013

The value of design

This chapter reveals how much design contributes to the economy, reporting on the gross value⁸ added by firms within the design economy. It also looks at how many firms are intensively using design, and the productivity of their workers. Through doing so, we have also been able to find out whether those firms who strategically use and invest in design perform better than their competitors.

➤ Gross value added

The design economy contributes £71.7bn in gross value added. This is equivalent to the output of the UK construction and logistics sectors, and contributes 7.2% of UK total GVA.⁹

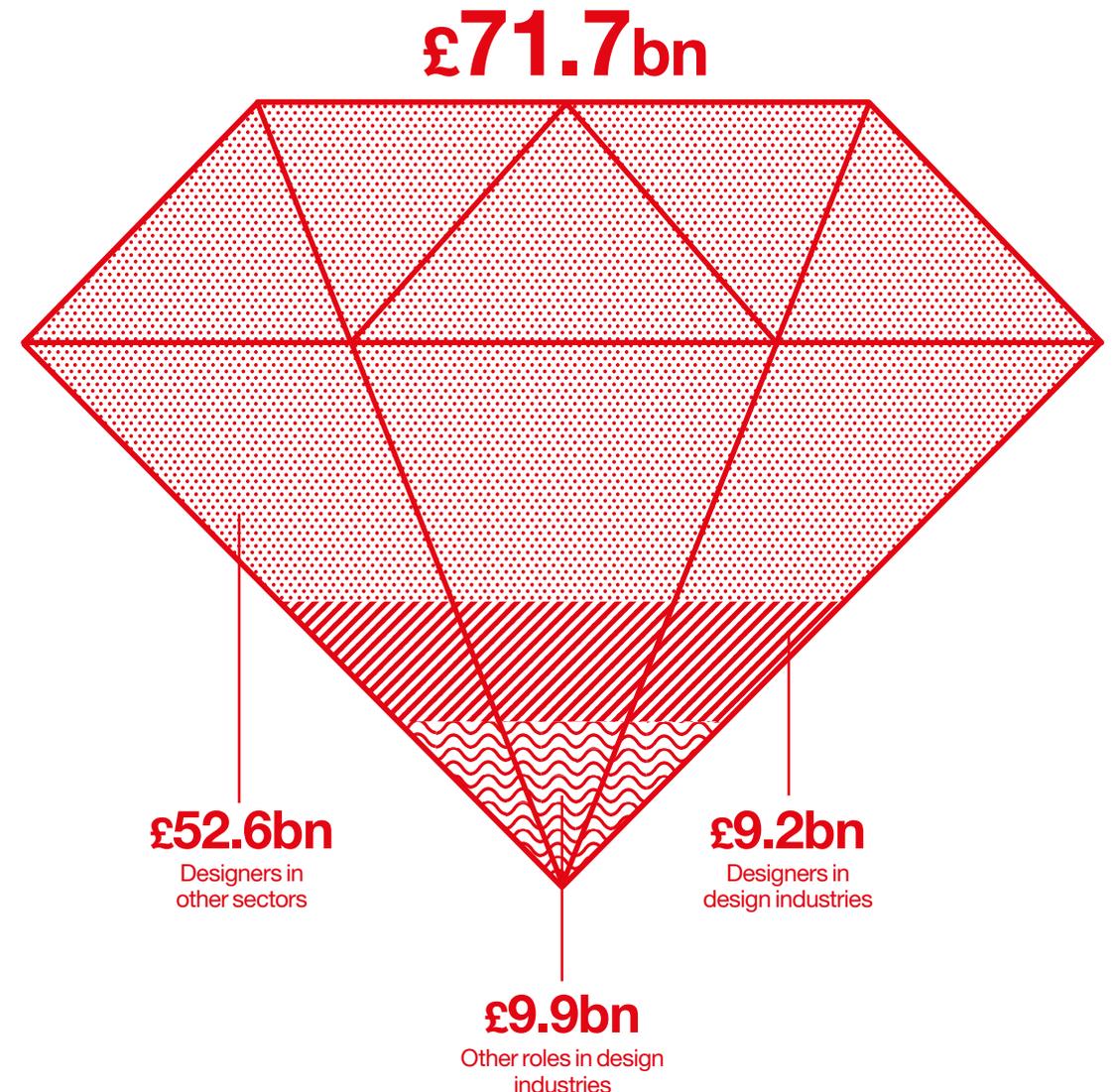
Design's impact cuts across the economy, with £52.5bn (nearly three-quarters) of design GVA generated by designers working in non-design industries such as finance and banking. £19.1bn in GVA is generated by design industries, and is relatively evenly split between that generated by designers and those working in other roles, supporting the design function.

Digital design makes a significant contribution to the design GVA footprint, delivering £30bn (42% of design GVA). The 'architecture and built environment' and 'product and industrial design' sectors are also key contributors, accounting for another £29.5bn in GVA collectively. These three sectors delivered 83% of total design economy GVA in 2013. Design's contribution to the economy has grown at a faster rate than the UK average. Over the period 2009-2013, GVA increased by 27.9% compared

to 18.1% across the UK¹⁰ as a whole. This means the design economy created an additional £15.7bn in output in 2013 compared to 2009. Each design subsector (with the exception of clothing design) has contributed to this growth in output. GVA contributed by digital design increased by 39.3% over the period. GVA contributed by multidisciplinary design increased by 32.1% over the period.

Clothing design saw an initial increase in GVA in 2010, followed by declines in each following year. This is reflective of trends in the broader textiles sector, which has undergone significant change in recent years, particularly due to high levels of off-shoring. However, outlook for the sector is more positive going forward, as reflected recently in the Alliance Project,¹¹ one of the largest ever pieces of research to explore the opportunities for growth in the UK's textiles sector.

Chart 1:
GVA across the design economy in 2013 (£bn)



Source: ONS (2014) Annual Business Survey 2008-2013

⁸ The measure of gross value added used in this report is approximate gross value added (aGVA). aGVA data is available via the Annual Business Survey and is the measure recommended by the Office for National Statistics when analysis at detailed industrial levels is required. More information is provided in Appendix 1

⁹ ONS (2014) Annual Business Survey 2008-2013

¹⁰ ONS (2014) Annual Business Survey 2008-2013

¹¹ Alliance Project Team (2015) Repatriation of UK textiles manufacture

Table 2: Design economy GVA 2009-2013 (£m)

Sector	2009	2010	2011	2012	2013	% change 2009-2013
Design (digital)	£21,571	£22,671	£26,533	£27,796	£30,041	39.3%
Design (multidisciplinary)	£3,228	£3,205	£3,934	£3,621	£4,263	32.1%
Architecture and built environment	£13,913	£12,487	£14,503	£14,899	£17,360	24.8%
Design (graphic)	£2,377	£2,254	£2,344	£2,898	£2,929	23.2%
Design (advertising)	£1,299	£1,693	£1,024	£993	£1,544	18.9%
Design (product and industrial)	£10,443	£10,542	£10,529	£10,921	£12,225	17.1%
Design (craft)	£2,895	£2,943	£3,444	£3,183	£3,046	5.2%
Design (clothing)	£313	£609	£452	£430	£292	-6.8%
Design economy GVA	£56,039	£56,404	£62,763	£64,741	£71,700	27.9%
UK economy GVA	£847,761	£880,920	£915,655	£937,039	£1,001,124	18.1%
Design % of UK GVA	6.60%	6.40%	6.90%	6.90%	7.20%	

Source: ONS (2014) Annual Business Survey 2008-2013

Design intensive industries

Our research identified firms and industries where 30% or more of the workforce were employed in design occupations (according to the SOC classifications). The following sections present data on the design intensive industries.

Firms

There are 72,340 design-intensive firms operating across the UK. This is comparable in size to building construction (76,630 firms), legal and accounting (75,600) and administrative business support (73,100).¹² Since 2010, the number of design-intensive firms has increased

by 51%, adding an additional 24,420 firms to the industry footprint. This far exceeds the growth rate for businesses across the UK as a whole, which was 5.7% across the same period.

Growth has been particularly strong in digital design, which has expanded by 109.7% to create 17,725 new firms since 2010. In combination with this, stronger than national average growth in architecture and built environment and multidisciplinary design means that despite contractions in some sectors (clothing, product and industrial, and craft design), the number of businesses in the sector as a whole has grown.

Case study: Dave

In a complex market which was seeing an explosion of channel choice, this small UK digital TV channel wanted to increase its share of the lucrative 16-44 year old male audience. Following market research, it was clear a complete rebranding was needed. With a very tight budget (under £100,000) the channel briefed a team of designers to create a distinct brand personality with stand out. They observed that in a congested TV market, strong design could play a powerful role. By identifying the tone of the programmes (intelligent and irreverent humour) and conducting investigation into why the channel appealed to its target audience, the design consultancy was able to gain a breakthrough insight: the comedy provided a setting for men to spend quality time with other funny men in a 'down the pub' style ambience.

The designers created a 'world' with personality where quirky, unexpected things happen. In assigning a name (Dave) to the channel, an iconic, compelling, ever-evolving brand was born, and continues to thrive eight years later.

Following its relaunch, Dave saw remarkable growth from the 29th biggest UK channel overall to the 10th, adding an additional eight million viewers within three months and becoming joint first non-terrestrial channel amongst their target audience in less than half a year. A design investment of under £100,000 was transformed into a profit of £4.5 million in the first six months alone, and the channel's incremental growth contributed £25m in ad-sales revenue for 2008.

Today Dave reaches over 26 million people every month and is the number one non-public service broadcasting channel in the country, watched by more than half the men in the UK, along with millions of women too. It's an unquestionable story of the power of rebranding and secured the DBA Design Effectiveness Awards' Grand Prix as demonstration of the exceptional commercial impact of the design.

Source: Whicher, Raulik-Murphy & Cawood. (2010) "Evaluating Design: Understanding the Return on Investment in Companies, National Industry, Programmes and Policies, Economy and Society." SEE Policy Booklet 03. PDR, Cardiff Metropolitan University

Image courtesy of Design Business Association



Dave

The differing patterns of growth and decline between subsectors reflect a difference between design services and the design and manufacture of goods. The industries encapsulated in product and industrial, clothing, and craft design are all concerned with the whole process of designing and making an item,

whereas those in other sectors are more centrally concerned with the provision of design service. The declines in those sectors are reflective of a broader trend of manufacturing underperforming in comparison to the service sector in recent years.¹³

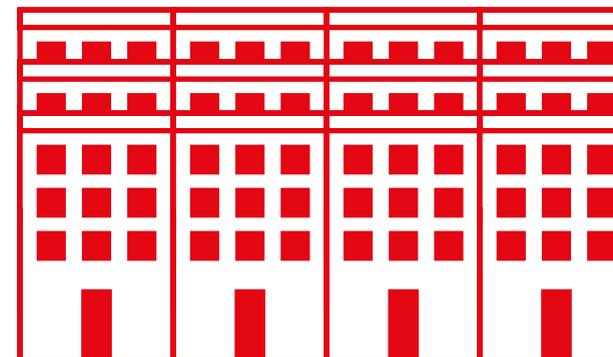
Table 3: Design industry firms 2010-2014

Sector	2009	2010	2011	2012	2013	% change 2009 - 2014
 Architecture and built environment	11,475	11,620	12,730	13,580	14,440	25.8%
 Design (clothing)	1,175	1,075	1,035	960	995	-15.3%
 Design (craft)	1,545	1,515	1,510	1,480	1,525	-1.3%
 Design (digital)	15,745	20,830	27,755	31,215	33,020	109.7%
 Design (multidisciplinary)	15,985	16,620	18,295	19,255	20,740	29.7%
 Design (product and industrial)	1,995	1,870	1,820	1,680	1,620	-18.8%
 Design total	47,920	53,530	63,145	68,170	72,340	51%
 % of UK total firms	1.90%	2.10%	2.40%	2.60%	2.70%	5.7%

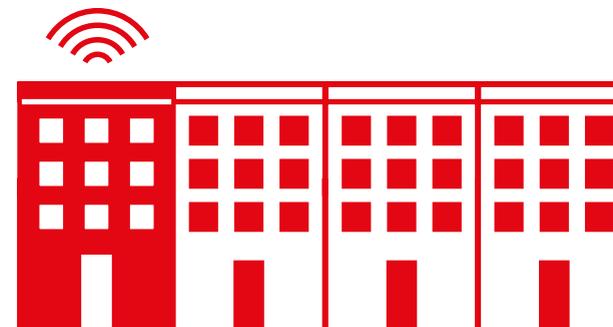
Notes: (1) Data not available for 2009. (2) Firm data not available for advertising and graphic relevant firms are likely to be captured in the multidisciplinary design subsector. Source: ONS (2015) UK Business Counts 2010-2014

¹² ONS (2014) UK Business Counts

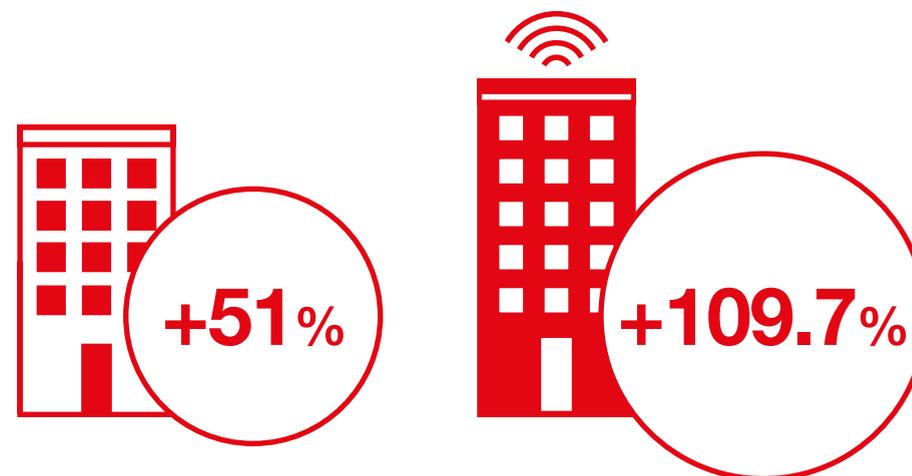
¹³ House of Commons (2015) Manufacturing: Statistics and Policy



72,340
Design firms operating across the UK



1 in 4
Firms are in digital design



Design intensive firms

Firms in digital design

➤ Productivity

In 2013, design workers were 41% more productive than the UK average, each delivering £47,400 in output (GVA per worker) compared to £33,600 across the rest of the economy.¹⁴ The productivity of design workers is similar to those working in film and television (£45,500 per head) and the manufacture of computer, electronic and optical products (£45,000 per head).¹⁵

Emphasising the role of design across industries, designers working outside of design industries are the most productive type of design worker; delivering an output of £53,500 per worker. This contrasts with an average output of £33,900 for designers in design industries and £38,200 for other roles in design industries. It is likely that the difference in productivity between designers and other roles in design industries is driven by the higher value added activity in roles such as management and professional occupations outside design.

Reflecting the embedded nature of many product and industrial designers, this is the most productive sector, with each worker delivering an output of £61,300. Digital and advertising designers are the next most productive, each outputting approximately £53,000 GVA per head.

The productivity of designers is increasing. Between 2009 and 2013, the productivity of the design economy grew by 9.5%. This varies across the design economy, and for those in design industries it rose 7.5%, (13.5% for those in other sectors). In contrast, the productivity of those working in other roles in design industries has decreased by 3.1%.

However, over the same period, design productivity as a whole has not increased to the same extent as the wider economy (9.5% compared to 13.9%).¹⁶ This is because productivity is not normally distributed across the design economy, with sectors such as architecture and built environment both highly productive and experiencing substantial growth, while others have experienced challenges with productivity. This is illustrated by considering trends at subsector level:

- Whilst digital design saw large increases in employment over the same period, the subsector has also witnessed a lower return in terms of output per worker. Productivity has increased, but by a comparatively low 6.4% (£3,100 per worker). This suggests that expansion in the workforce hasn't necessarily been met with improved performance or increased output. The large size of the digital design sector means that this has the effect of pulling down the average.
- This is compounded by declines in productivity in craft, advertising and clothing design over the period. However, after initial decreases, productivity in advertising design has increased and in craft, design has held steady in recent years. In contrast, productivity in clothing design has continued to fall in line with decreases in GVA and employment seen in previous sections.

¹⁴ Productivity calculated using aGVA from ONS (2014) Annual Business Survey 2008-2013 and ONS (2014) Annual Population Survey 2013

^{15, 16} ONS (2014) Annual Business Survey 2008-2013; ONS (2014) Annual Population Survey 2013

➤ Case study: Rolls-Royce Holdings

In a complex and competitive market, the requirement for Rolls Royce to innovate by producing new improvements and products has been increasing all the time. In response to the ever increasing need for speed in design, the business has been leading the sector in developing design engineering automation and 'Knowledge-Based Engineering' (KBE). KBE uses knowledge models, to represent objects being designed by bringing together the input variables including, for example, geometry, engineering, manufacturing, cost and legal rules to develop a coherent knowledge model facilitating integration across systems and applications, avoiding unnecessary re-keying, duplication and delivering substantial time efficiencies alongside alternative scenario explorations.

Design is one of five core engineering disciplines within Rolls-Royce, and the role of Designer is held in high regard. Designers are responsible for providing creative solutions to complex sets of requirements, and it is this innovation that generates intellectual property for

the company and maintains a competitive advantage across its product ranges. The business generates the largest number of patents of any UK company, with 549 patents approved for filing in 2013.

The company expanded investment in early-stage research and technology to about 20% of its net research and development (R&D) spend. In 2013 Rolls-Royce invested over 7% of its annual turnover in R&D (£1.118bn). In addition to their in-house R&D capability, the business pursues advanced technologies via their global network of 31 University Technology Centre Partnerships. Each centre is part-funded by the Rolls-Royce Group, working closely with their engineering teams and undertaking specialist work led by a group of world-class academics.

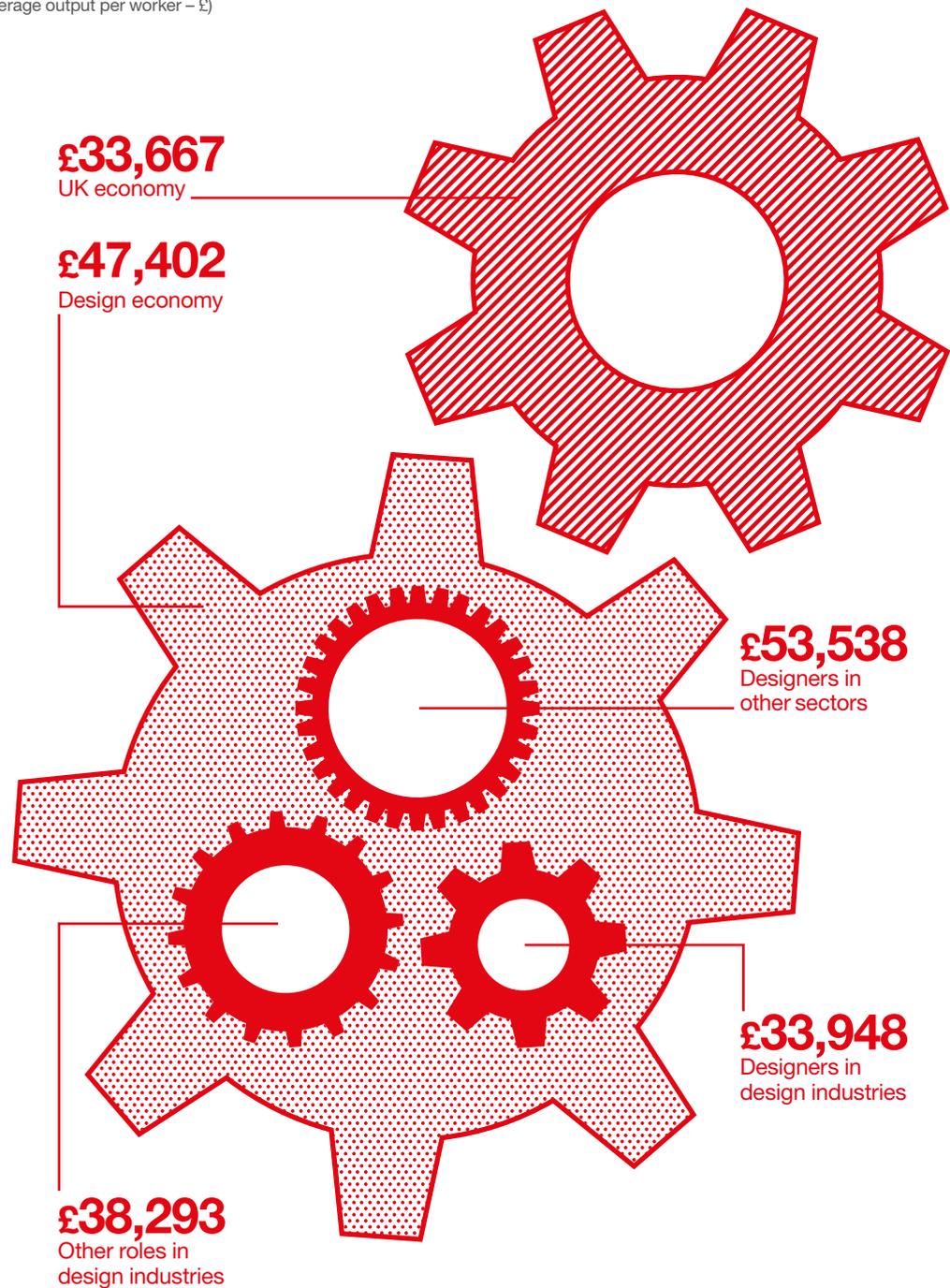
By looking at the design processes and using free-form modelling, Rolls-Royce has delivered increases in productivity of up to 10 times in fan design and a 40% reduction in engine lead time.

Source: Birmingham Made Me (2014). Rolls Royce Holdings Plc. birmingham-made-me.org/rolls-royce-holdings-plc/#:vfaWbRFVhBd



Chart 2: Productivity across the design economy

2013 (average output per worker – £)



Source: ONS (2014) Annual Business Survey 2008-2013; ONS (2014) Annual Population Survey 2013.

Table 4: Design economy productivity 2009-2013 (average output per worker – £)

Sector	2009	2010	2011	2012	2013	% change 2009-2013	£ change 2009-2013
Design (graphic)	£21,054	£21,305	£22,688	£24,410	£25,532	21.30%	£4,478
Design (multidisciplinary)	£31,307	£31,266	£40,060	£35,609	£37,165	18.70%	£5,858
Architecture and built environment	£41,893	£39,267	£44,557	£44,916	£47,930	14.40%	£6,037
Design (digital)	£50,107	£51,772	£53,852	£50,493	£53,293	6.40%	£3,185
Design (product and industrial)	£59,673	£56,493	£55,359	£56,379	£61,310	2.70%	£1,637
Design (craft)	£29,040	£27,126	£30,024	£28,021	£28,020	-3.50%	-£1,02
Design (advertising)	£55,504	£58,582	£45,707	£43,918	£52,699	-5.10%	-£2,805
Design (clothing)	£18,101	£28,204	£20,560	£22,851	£14,525	-19.80%	-£3,576
Design economy productivity (average output per worker across all sectors)	£43,306	£43,059	£45,839	£44,608	£47,402	9.50%	£4,095
UK economy productivity (average output per worker)	£29,557	£30,677	£31,624	£31,987	£33,667	13.90%	£4,110

Source: ONS (2014) Annual Business Survey 2008-2013; ONS (2014) Annual Population Survey 2013.

Productivity in design-active firms

As part of our research we looked at the difference between ‘design-active firms’ and their peers. Design-active firms are those that invest in and use design strategically, though don’t necessarily have a large proportion of designers in their workforce.

To explore the added value of design in non-design industries, we compared the productivity of a shortlist of design-active firms to the average performance of their relevant sectors. Financial data for each of the firms identified was extracted from TBR’s unique business database Trends Central Resource (TCR), and validated by comparing with Companies House records. This validation process was to ensure accuracy, and completeness in capturing all of the firms’ activities.

This resulted in a list of 52 firms, reflecting those sectors emerging as important users of design: high value added manufacturing, energy and water, financial, and IT and communications. A full list of the firms studied is included within the technical blueprint on Design Council website – designcouncil.org.uk/designeconomy.

Recent employment, turnover and GVA figures were gathered for each design-active firm, and the average for design-active firms in each sector was compared with average figures for those sectors as a whole. Table 5 shows that in each of the four sectors examined, the average output per employee is greater in firms which are recognised as being design-active.

Table 5: Comparison of productivity in design-active firms with sector average (average GVA per head)

Sector	Design active firms	UK sector average	Difference
IT and communications	£119,000	£96,000	+24.0%
Financial	£116,000	£107,000	+8.4%
Energy and water	£157,000	£137,000	+12.7%
High value added manufacturing	£330,000	£58,000	+469.0%

Source: Trends Central Resource, Annual Business Survey, Annual Population Survey. Note: Due to suppression in ABS data for some high value added manufacturing subsectors, the comparison is not with the sector as a whole.

Turnover

Design businesses generated £33.4bn in turnover in 2013, which is equivalent to the chemicals sector (£31.9bn) and non-public education sector (£35.4bn).¹⁷ Between 2009 and 2013, design industry turnover increased by 19.7%, generating an additional £5.4bn on the 2009 position. This was driven by strong turnover growth in multidisciplinary and digital design and growth in architecture and built environment. Reflecting the general decline in manufacturing versus services (as noted previously), total turnover reduced in product and industrial, clothing and craft.

Turnover per design firm reduced by 13% between 2010 and 2013, compared to an increase of 15% in average turnover across the economy as a whole. Considering the overall increase in the number of firms reported in the previous section, this suggests that this is most likely due to a proliferation of small companies starting up, with the sector now containing a larger number of firms generating lower individual revenues.

Turnover per firm reduced in every subsector except architecture and built environment, and multidisciplinary design between 2010 and 2013. Digital design saw an increase of an additional 17,725 firms over the period. This was not matched in turnover, which increased by only £5m, meaning average turnover per firm across all sectors decreased by 35%.

Design businesses generated



in turnover in 2013

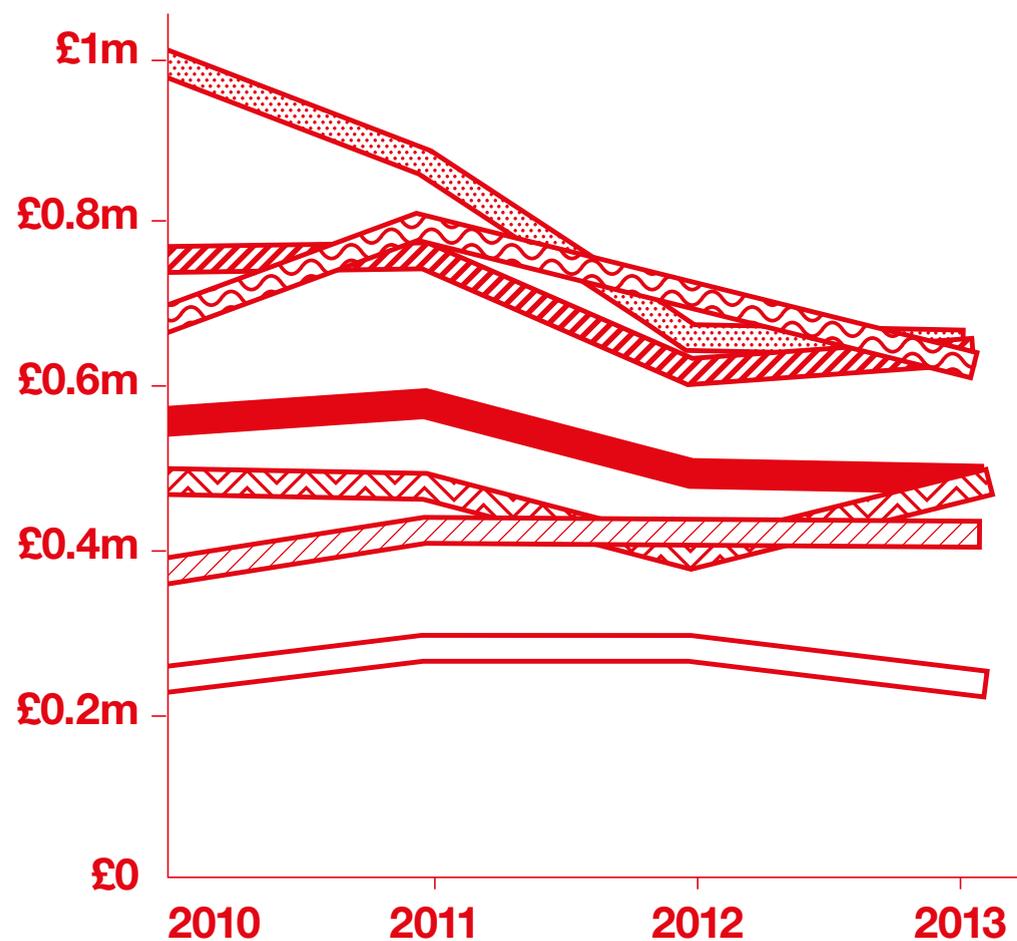
Table 6: Turnover generated by design industry firms 2009-2013 (£m)

Sector	2009	2010	2011	2012	2013	% change 2009-2013
Design (multidisciplinary)	£3,724	£3,938	£4,784	£5,134	£4,899	31.6%
Design (digital)	£15,367	£15,655	£18,116	£18,370	£20,220	31.60%
Architecture and built environment	£4,830	£4,320	£4,997	£5,410	£5,767	19.4%
Design (craft)	£976	£1,085	£1,242	£1,114	£971	-0.5%
Design (clothing)	£592	£573	£517	£417	£461	-22.1%
Design (product and industrial)	£2,416	£1,502	£1,421	£1,127	£1,084	-55.1%
Design economy turnover	£27,905	£27,073	£31,077	£31,572	£33,402	19.7%
UK economy turnover	£2,869,816	£3,025,220	£324,106	£3,331,193	£3,538,442	23.3%
% of UK total turnover	1.00%	0.90%	1.00%	0.90%	0.90%	

Source: ONS (2014) Annual Business Survey 2008-2013

¹⁷ ONS (2014) Annual Business Survey 2008-2013.

Chart 3:
Average turnover per firm in design industry 2010-2013 (£m)



 Architecture and built environment
 Design (multidisciplinary)
 Design (craft)
 Design (digital)
 Design (clothing)
 Design (product and industrial)
 Design total

Source: ONS (2014) Annual Business Survey 2008-2013

Case study: Fudge Kitchen

Fudge Kitchen was eager to grow its business by entering the wholesale market and expanding throughout the UK. Through the 'Designing Demand' programme, Design Council worked with Fudge Kitchen over six months to assess what its business challenges were, identifying three key areas to support a strategic route to success:

- The shelf life of the product had to be extended before entry into the wholesale market
- The product needed a more upmarket positioning
- Greater brand clarity regarding logo and naming was required.

With Design Council support in place, and agency Ape Creative carrying out the brief, the business achieved its wholesale goal and went on to strike a number of deals with exclusive outlets including Lakeland, Selfridges and multiple speciality food outlets.

After an initial investment of around £10k in rebranding, Fudge Kitchen management came to appreciate the role and value of design in achieving their aim to "become the most devilishly different premium fudge brand in the UK and abroad". They now budget to spend a minimum of 5% of net turnover annually on new packaging, product or point-of-sale design.

A year after Fudge Kitchen completed its product rebrand with the support of Design Council, it grew its wholesale turnover from £0 to £70k, which subsequently grew to £450k by 2014. Crucially, Fudge Kitchen's presence on the high street continues to grow through the introduction of a range of new products, including a gourmet fudge selection and a make-at-home kit.

Source: Design Council Case Study. designcouncil.org.uk/resources/case-study/fudge-kitchen



World-class design

As economies such as the UK face up to new global economic realities, design will play an ever more important role in ensuring they remain competitive. Exports are a good indication of the strength of the UK economy more widely, showing the extent to which our products and services are in demand from across the world. This chapter looks at the total value of exports influenced by the design economy. That is, where design has made a contribution to the export of goods and services. It starts with an overview of key data for the UK, before progressing to a more in-depth analysis of how the UK compares to its international competitors in terms of exports, design registrations and business use of design.

➤ Exporting world-class design from the UK

Design is a vital ingredient for any UK business wanting to export more. Our previous evaluation of our Designing Demand programme, demonstrated that for every £1 companies invest in design to support their growth, they can expect to return £5 in exports.

As part of the research for The Design Economy, we assessed the contribution of design to the export of goods and services. We found that in 2013, the total value of exports where design had made a contribution was £34bn. This constituted 7.3% of total UK exports that year.¹⁸ As such, the contribution of design to exports is similar in size to exports in the 'professional, scientific and technical services' sector (£32bn).

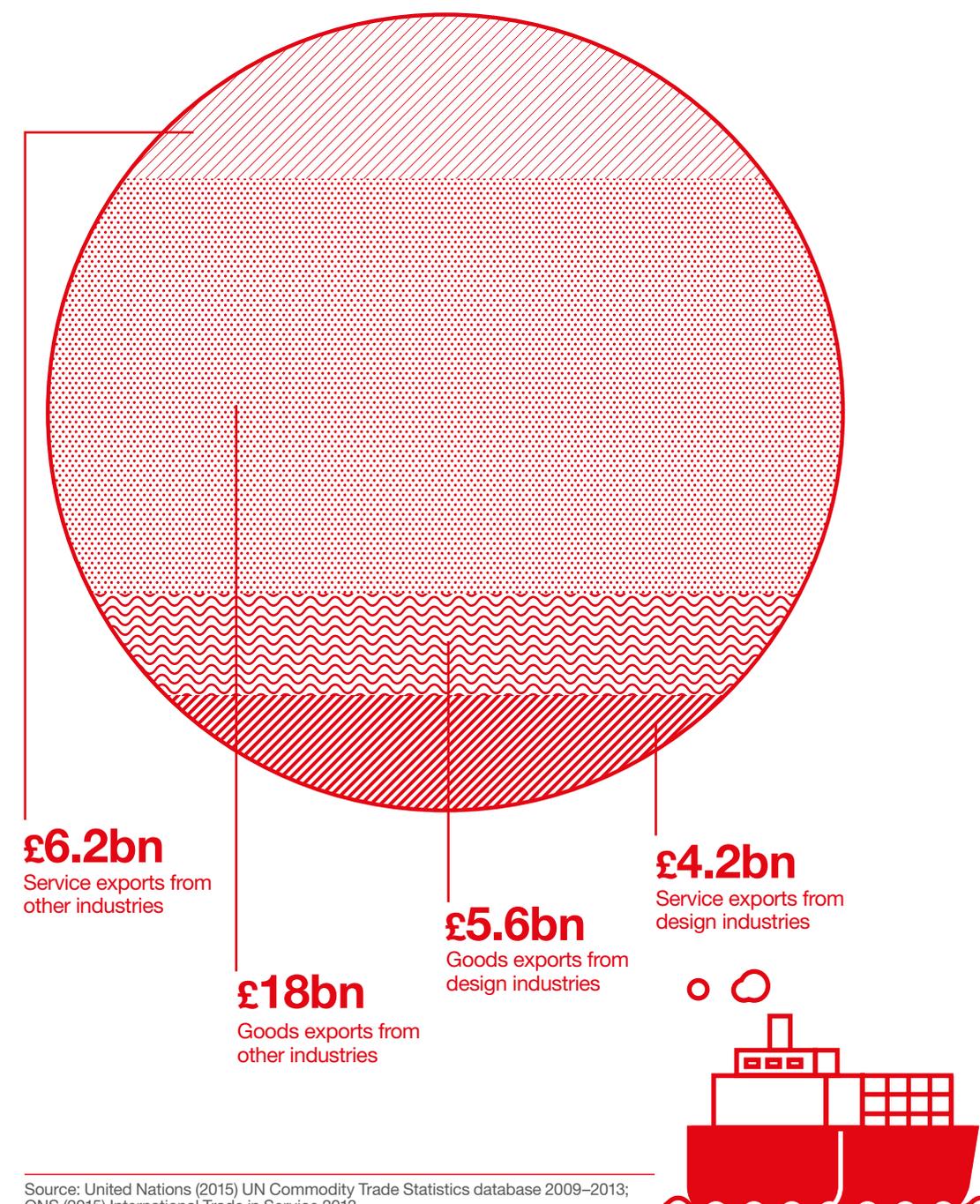
Design's contribution to exports is also growing. Between 2009-2013, design-influenced exports increased by 51.4%; this is slightly higher than the UK average of 48.9%.¹⁹ This means the design economy created an additional £11.5bn in exports in 2013 compared to 2009.

Whilst each design subsector has contributed to this growth in exporting, our research shows that some sectors made a more substantial contribution than others to total exports in 2013. As Table 7 overleaf shows, digital design delivers £12bn (35% of design-influenced exports), whilst architecture and built environment and product and industrial design are also major contributors, accounting for another £13.2bn in exports collectively.

¹⁸ United Nations (2015) UN Commodity Trade Statistics database 2009–2013; ONS (2015) International Trade in Service 2013

¹⁹ United Nations (2015) UN Commodity Trade Statistics database 2009–2013; ONS (2015) International Trade in Service 2013

Value of exports from the design economy, 2013



Source: United Nations (2015) UN Commodity Trade Statistics database 2009–2013; ONS (2015) International Trade in Service 2013

Table 7: Value of design-influenced exports by subsector, 2009-2013 (£m)

Sector	2009	2010	2011	2012	2013	% change 2009-2013
 Design (product and industrial)	£4,043	£5,563	£5,978	£5,638	£6,599	63.2%
 Design (digital)	£7,622	£8,916	£10,946	£11,219	£12,066	58.3%
 Architecture and built environment	£4,233	£4,378	£5,462	£5,268	£6,672	57.6%
 Design (graphic)	£867	£913	£1,060	£1,240	£1,353	56%
 Design (advertising)	£474	£686	£463	£425	£713	50.5%
 Design (multidisciplinary)	£605	£590	£777	£669	£891	47.3%
 Design (clothing)	£4,605	£5,317	£6,050	£6,424	£5,803	26%
 Design economy total	£22,527	£26,430	£30,746	£30,898	£34,097	51.4%
 UK economy total	£314,702	£360,114	£428,991	£412,386	£468,592	48.9%
 Design as % of UK total	7.20%	7.30%	7.20%	7.50%	7.30%	

Source: United Nations (2015) UN Commodity Trade Statistics database 2009–2013; ONS (2015) International Trade in Service 2013.

Note: Small sample sizes mean that it was necessary to combine the export values of the craft and clothing subsectors in order to be able to extract data on exports for these sectors.

International comparison of design sectors

In terms of scale and scope, the UK has the largest design sector in Europe and the UK government was one of the first to recognise the power of design in business. The challenge is to build on our success to become the global lead, by increasing our design-influenced exports and supporting businesses to expand into overseas markets.

International comparison: exports

Our research shows that the total value of UK design-related exports ranks fifth behind Hong Kong, Switzerland and its EU neighbours Germany and Italy. The UK's world class design economy therefore has yet to reach its full potential as an exporter.

Case study: Gripple

Gripple is a Sheffield-based, Queens Award-winning manufacturer of a wire joining and tensioning device – the Gripple – which connects wires and holds them tight. Since launching the Gripple in 1988, the company has developed more than 100 new products and has an annual turnover of over £39m, 85% of which comes from exports to more than 80 countries.

In 2007, Gripple's management team looked for help from Design Council to generate further growth and ensure design and new product development was managed as effectively as possible. Design Council began by helping the team identify key projects which could add value to the business, and streamlining the new product development process. As a result, Gripple was able to assess whether a particular product idea was viable earlier in its development, and also invested £40,000

in upgrading their Ideas and Innovation Centre to make this dedicated product design area more creative. Today, Gripple's products are coming to market faster and productivity has improved. Turnover has grown 2.5 times from £15m in 2007 to £39m in 2014.

"Our growth since 2007 has been extraordinary, averaging out at 10% a year. This can be put down to the strengthened focus we have on new product development. We now have a 10-strong innovation team delivering 25% of our turnover every year from products less than four years old."

Gordon Macrae, Special Projects Manager, Gripple.

Source: Design Council Case Study. designcouncil.org.uk/resources/case-study/gripple



Table 8: Design-related exports

Country	Total design related exports (US\$ million per year, 2011)	Rank (absolute)	Population (millions, 2011)	Total design related exports (million population)	Rank (relative)
Hong Kong	24,921	6	7	3560	1
Switzerland	10,059	10	7.9	1273	2
Italy	28,065	3	60.7	462	3
Germany	34,699	2	82.8	419	4
United Kingdom	25,235	5	62.6	403	5
France	20,874	7	65.7	318	6
Spain	10,618	9	46.5	228	7
United States	26,443	4	318.7	83	8
China	97,009	1	1,368.40	71	9
India	19,893	8	1,211.10	16	10

Source: United Nations (2015) UN Commodity Trade Statistics database 2009–2013

International comparison: WIPO design registrations

As part of our research, we also looked at design registrations, which are an important indicator of innovation in an economy. Our research shows that despite a considerable number of registrations, the UK sits third, with South Korea topping the rankings in World Intellectual Property Organization (WIPO) design registrations. This means the UK regressed in both absolute and relative terms in design registrations compared to 2002, when it was ranked fourth and sixth in the world respectively. Although no detailed

studies have been conducted to ascertain the drivers behind this, successive Korean government design policies have provided practical support for innovation, particularly in manufacturing. An example of this is the Industrial Technology Development Fund, which provides long-term low interest loans to support small and medium-sized enterprises (SMEs) developing prototypes.

²⁰ United Nations Conference on Trade and Development (UNCTAD) data on design-influenced exports was used for this international comparison. Design-influenced exports as defined by UNCTAD includes creative goods (CER017 architecture CER018 fashion CER019 glassware CER020 interior CER021 jewellery CER022 toys) and creative services (advertising; market research and public opinion polling; architectural, engineering and other technical services). It has a much narrower definition of design from the one we have used for the rest of this report. For example, it does not include design engineers or the contribution of design from in-house design teams across the sector. As a result, the UK exports figures are much smaller. But in order to ensure that we are making an accurate assessment, we have used it in this specific comparison.

Table 9: WIPO design registrations

Country	Total number of WIPO design registrations	Rank (absolute)	Population (millions, 2013)	Design registrations (per million population)	Rank (relative)
Republic of Korea	47308	2	50.2	942.39	1
Australia	7064	6	23.1	305.8	2
China	412467	1	1357	303.96	3
Japan	28288	3	127.3	222.22	4
Turkey	9602	5	74.9	128.2	5
Canada	3785	10	35.1	107.8348	6
United States of America	23468	4	316.4	74.17	7
Germany	5912	8	80.6	73.34988	8
United Kingdom	4672	9	64.1	72.88612	9
India	6975	7	1252	5.57	10

Source: WIPO IP Statistics Data Center (ipstats.wipo.int) Total design applications (direct and via the Hague system), total count by filing office; (2013)

International comparison: business use of design

Our research also looked at business use of design in Europe, using the European Commission's InnoBarometer,²¹ an annual survey into business innovation. For the first time, it measured the use of design by businesses across Europe. Some 14,118 companies were surveyed in February 2015, across the 28 EU member states, USA and Switzerland.

The survey found that 22% of UK businesses say that design is a central element to their strategy, and a further 20% say that design is an integral part of development work. The UK also leads the European countries in the strategic use of design, ahead of Denmark, Sweden and the Netherlands. Design therefore plays a key role in maintaining the competitive edge of UK businesses over international rivals, as evidenced by Morgan Motor Company (see case study overleaf).

The InnoBarometer also found interesting differences in responses based on the size of the company – the larger the company, the more likely it is to say design is central to their business. Likewise, age seems to play a factor, with newer companies more likely to use design, possibly due to the role digital design is now playing in start-ups.

Finally, the research shows a strong link between companies whose turnover has increased are more likely to say they use

design than those whose turnover have decreased, reflecting previous studies into the financial benefits of investing in design, including our Leading Business by Design reports (2014/5). All of this reinforces the relationship between design, innovation and business growth, and is why the UK must continue to invest in design if it is to become the world leading.

Table 10: Design use by European businesses²²

	Country	Design is a central element in the company's strategy	Design is an integral, but not central, element of the development work in the company	Design is used as last finish, enhancing the appearance and attractiveness of the final product	The company does not work systematically with design	Design is not used in the company
1	United Kingdom	22%	20%	13%	10%	33%
2	Luxemburg	18%	26%	15%	12%	28%
3	Netherlands	18%	14%	11%	15%	40%
4	Switzerland	18%	16%	17%	15%	32%
5	Germany	17%	17%	14%	17%	33%
6	Malta	17%	39%	13%	4%	27%
7	Austria	17%	18%	22%	16%	26%
8	Denmark	15%	16%	13%	19%	32%
9	Ireland	14%	17%	15%	15%	36%
10	Romania	14%	15%	13%	16%	40%

²¹ Innobarometer 2015 – The Innovation Trends at EU Enterprises (ec.europa.eu/growth/industry/innovation/facts-figures/innobarometer/index_en.htm)

²² Greek and Cypriot results have been excluded due to errors in translation that significantly misrepresent use of design by businesses in those countries. This has been confirmed by the European Commission

Case study: Morgan Motor Company

Morgan Cars have become design icons by delivering great driving experience, created and produced by a loyal workforce with many years' experience and a genuine love of the brand.

"The traditional Morgan has become very familiar and recognisable, so it has been registered as a shape. No other car company in the world has done this. Morgan has, over many years, taken the view that design really makes a difference to the 'appeal' of a product. The brand identity is controlled by the quality of the product design and in the way it is displayed and promoted."

Charles Morgan, grandson of founder, Henry Frederick Stanley Morgan.

In recent years, digital design technologies have had a big impact on the design process and the company has a well-equipped digital design department leading to greater efficiencies in build times. Production has risen from 450 cars a year in the late 1990s to 1,000 cars built in 2013.

The company is very much aware of the legacy of its founder, and actively promotes its heritage. Around 20,000 people come to the factory each year to visit the Motor Heritage Centre, as a chance to get closer to the Morgan story and celebrate its culture of creating original cars to be fast, fun to drive, lightweight and responsive.

Morgan remains the largest family-owned carmaker in British hands, producing around 1,000 cars in 2012 and 2013 as a low volume, specialist niche producer, combining craft and cutting-edge technologies. 70% of production is exported, primarily to the EU, but with growing interest from US and BRIC markets.

"All our cars are handmade, hand-cut, hand-assembled. Our design team are in tune with Morgan's DNA and have a real empathy and understanding of how to build on this by finding new design routes for the future. They're using wood and leather with other authentic materials, while respecting their natural qualities and our performance attributes and aspirations."

Charles Morgan.

Source: Birmingham Made Me (2014) Morgan Motor Company. birmingham-made-me.org/morgan-motor-company/#.VfaucBFVhBc



Scale and scope of the UK design economy

Design has always made an important contribution to life in the UK. This chapter outlines the scale and scope of the design economy, in particular looking at the number of people working in design-related roles. It also takes a closer look at those working within the design economy, examining their backgrounds, pay and working patterns.

➤ Employment

Employing 1.6 million people, the design economy is the ninth biggest employment sector in the UK. This is comparative to the hospitality sector (1.6 million employees) and the logistics sector (1.5 million).

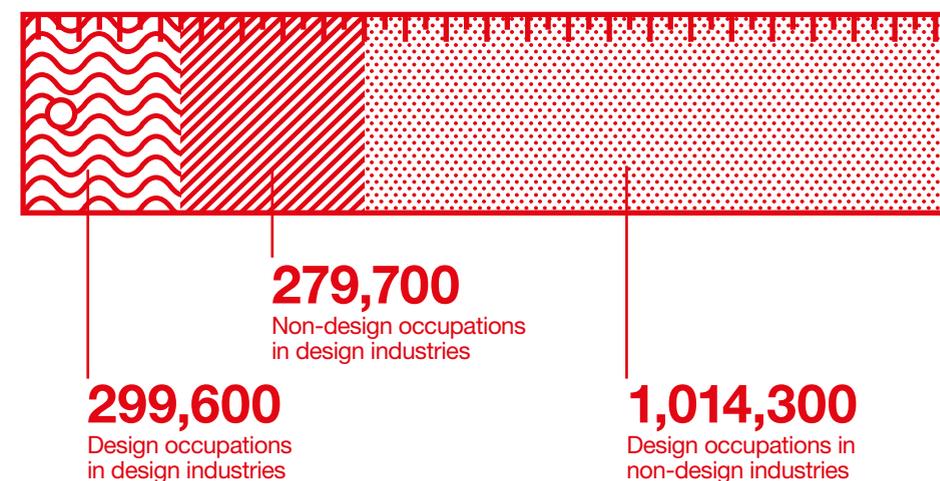
This includes just under 580,000 people directly employed in the UK's design industries, and a further one million designers working in other sectors. This emphasises how embedded design is across the economy.

Demand for design is high and growing. Between 2010 and 2014 design employment grew by 21.7% compared to 6.1% for the UK economy as a whole.²³ The share of the total workforce employed in design is also increasing, up from 4.6% in 2009 to 5.2% in 2013.

Digital design is the largest subsector within the design economy, employing 608,000 people. Of those designers working in non-design industries, they are most commonly found in the product and industrial and advertising sectors, followed by those in architecture and built environment.

Following the trend in GVA shown in the previous section, clothing was the only subsector to see a decline in employment over the period.

Chart 5: Employment across the design economy



Source: ONS (2015) Annual Population Survey 2014

Table 11: Design economy employment 2010-2014

Sector	2010	2011	2012	2013	2014	% change 2010-2014
Design (digital)	437,900	492,700	550,500	563,700	608,400	38.9%
Design (multidisciplinary)	102,500	98,200	101,700	114,700	136,700	33.4%
Design (graphic)	105,800	103,300	118,700	114,700	124,000	17.2%
Architecture and built environment	318,000	325,500	331,700	362,200	372,400	17.1%
Design (product and industrial)	186,600	190,200	193,700	199,400	196,700	5.4%
Design (advertising)	28,900	22,400	22,600	29,300	30,000	3.8%
Design (craft)	108,500	114,700	113,600	108,700	108,600	0.1%
Design (clothing)	21,600	22,000	18,800	20,100	16,700	-22.7%
Design total	1,309,900	1,369,200	1,451,300	1,512,600	1,593,600	21.7%
Creative industries total	1,425,000	1,551,000	1,684,000	1,708,000	1,792,400	25.8%
Total (all sectors)	28,836,600	28,954,200	29,294,700	29,736,500	30,453,900	5.6%

Source: ONS (2015) Annual Population Survey 2014

²³ ONS (2015) Annual Population Survey 2014

Demographics

Our research examined who works in the design economy, and found a relatively young, male-dominated workforce.

Gender

The gender balance in the design workforce is 78:22 male: female, compared to 53:47 in the wider workforce.

The overall ratio is skewed by the male dominated subsectors of product and industrial design, digital design, and architecture and built environment.

The design subsectors most likely to employ women are clothing (68.3% female workforce) and multidisciplinary design (62.3%).

Age

The design workforce is younger than average. 63% of designers are aged under 45, compared with 57% of the workforce as a whole.

Digital is the youngest subsector, with 72% of the workforce under 44. Clothing is the oldest, with only 48% of the workforce under 44 years old.

Ethnicity

Across the design workforce, 11.4% of people are from a Black, Asian or Minority Ethnic (BAME²⁴) background, a similar proportion to the average across the wider workforce (11%).

The most diverse subsectors are digital (19% of the workforce are from a BAME background) and clothing (17.9%). Both subsectors have a higher proportion of employees of Indian heritage: 8.9% in digital and 6.5% in clothing, compared with 4.3% of all designers and 2.6% of the workforce as a whole.

The least diverse design subsectors are graphic (4.4% of the workforce are from a BAME background) and architecture and built environment (6%).

Disability

Across the design workforce 11.7% of people are disabled or have a work-limiting illness, compared with 13.1% of the wider workforce.

The design subsectors most likely to employ a disabled person are clothing (20.3% of the workforce) and multidisciplinary design (18.5%). The least likely is product and industrial design (7.1%).



²⁴ Black, Asian or Minority Ethnic

Qualifications

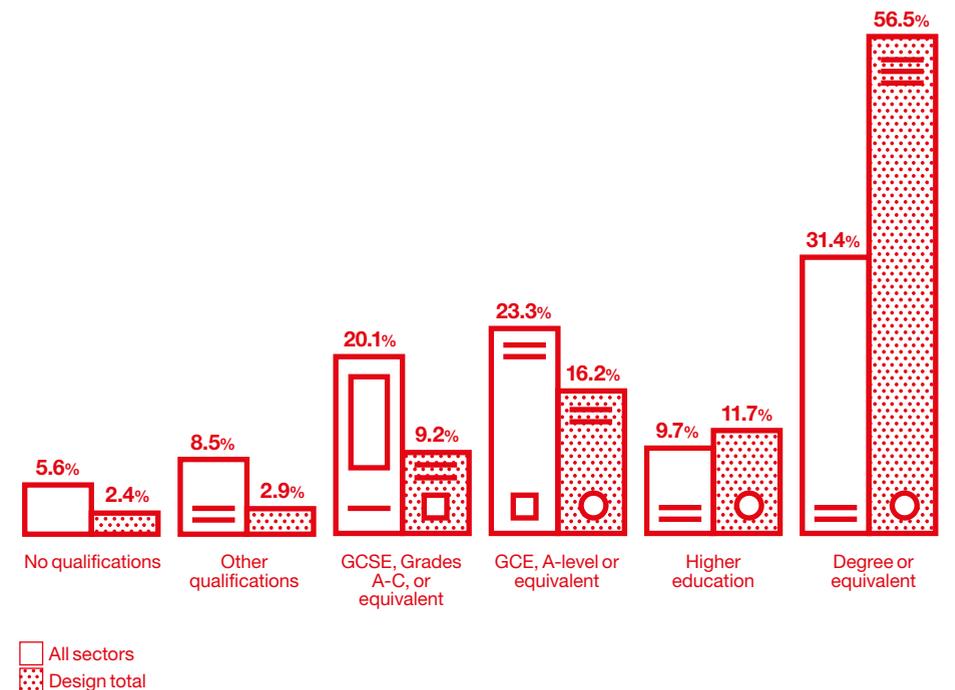
Designers are increasingly degree educated. Our research found:

- Across the design workforce 56.5% of workers held a degree as their highest level of qualification (in 2013), compared with 31.4%.²⁵ This also means the percentage of the design workforce holding a degree has risen from 41.9% in 2010.

- Digital design has the most highly qualified designers. 68.6% of the digital workforce holds a degree as their highest level of qualification, 63.8% in advertising and 62.2% in graphic design.

- The subsectors with the lowest proportions with a degree are craft (17.5%) and clothing (15.4%), which also feature the highest proportions with no qualifications (10.7% and 16.3% respectively, compared with 5.6% of the total workforce).

Chart 6: Highest level of qualification, 2014
Design economy (n=1,313,900) and UK economy (n= 30,453,900)



Source: ONS (2015) Annual Population Survey 2014

Note: Charts may not sum to 100%. A small percentage of the design workforce (0.2%) did not know their highest level of qualification. The equivalent value for the UK Economy is also 0.2%

²⁵ ONS (2015) Annual Population Survey 2014

➤ Case study: Liftshare

Liftshare is a digital car-sharing platform. It demonstrates the growing use of digital and service design to create an innovative and potentially disruptive offering for the automotive sector.

“The efficiency of cars is just phenomenal, but the only thing that makes them inefficient is that there are five seats... and only one person in them.”

Ali Clabburn, CEO of Liftshare

Liftshare is an online service, with the ultimate goal of making sharing cars normal. Driven by pioneering software, Liftshare was designed to provide traditional travel options: access to one-off lifts and car-sharing schemes for individuals and corporate customers, as well as coaching options, and applications to encourage behaviour change and increase the sharing of car journeys.

The overall design of the service and its interface has been very important to encourage use of the system – this is particularly critical when implementing

a service that is about changing behaviour. My Personal Travel Plan (MyPTP) is a platform designed by Liftshare to overcome barriers to behavioural change. MyPTP functions as a simple online application that integrates data for all modes of transport, including walking, cycling, public transport, park and ride, car-sharing and single occupancy car journeys.

“The look, design, of online systems can have a great impact on generating a sense of branding... So, the look is very important, [as well as] the actual functionality and the simplicity of it.”

Ali Clabburn, CEO of Liftshare

Liftshare continuously applies design to help individuals share cars and save money. It also generates commercial solutions to transportation problems and helps businesses reduce their environmental impact. Generally, 90% of people who try Liftshare services continue to use them. Every day, it removes an estimated 78,000 car journeys from British roads.

Source: Design Council (2013) Leading Business by Design: Automotive sector



Image: Courtesy of Liftshare

➤ Wages

Understanding pay in the design economy is a clear sign of the demand for design skills and services. Our research shows that the average weekly salary for workers in the design economy is £635 per week, £250 higher than the UK average weekly wage of £385.²⁶ Chart 7 shows that digital design pays the highest salary (£731 per week), followed by product and industrial (£712). The lowest salaries are paid in clothing (£250) and craft (£369).

Our research also found that demand for design skills is growing, in line with our findings elsewhere. The average salary for designers has risen by 6.5% since 2011, more than the overall average UK salary which has risen by 5.5%. Among design subsectors, the largest increase was in advertising, where average salaries for designers rose by 18.3% between 2011 and 2014, from £577 to £683 per week. In contrast, the average salary for digital designers rose by just 3.3% over the same period, from £692 in 2011 to £715 in 2014.

➤ Working patterns

The increasing number of firms in the design economy is distinguished by the number of small businesses and freelancers. This suggests a dynamic movement, and whilst this part of a wider trend nationally, levels of self-employment in design are almost twice the UK average. Our research shows:

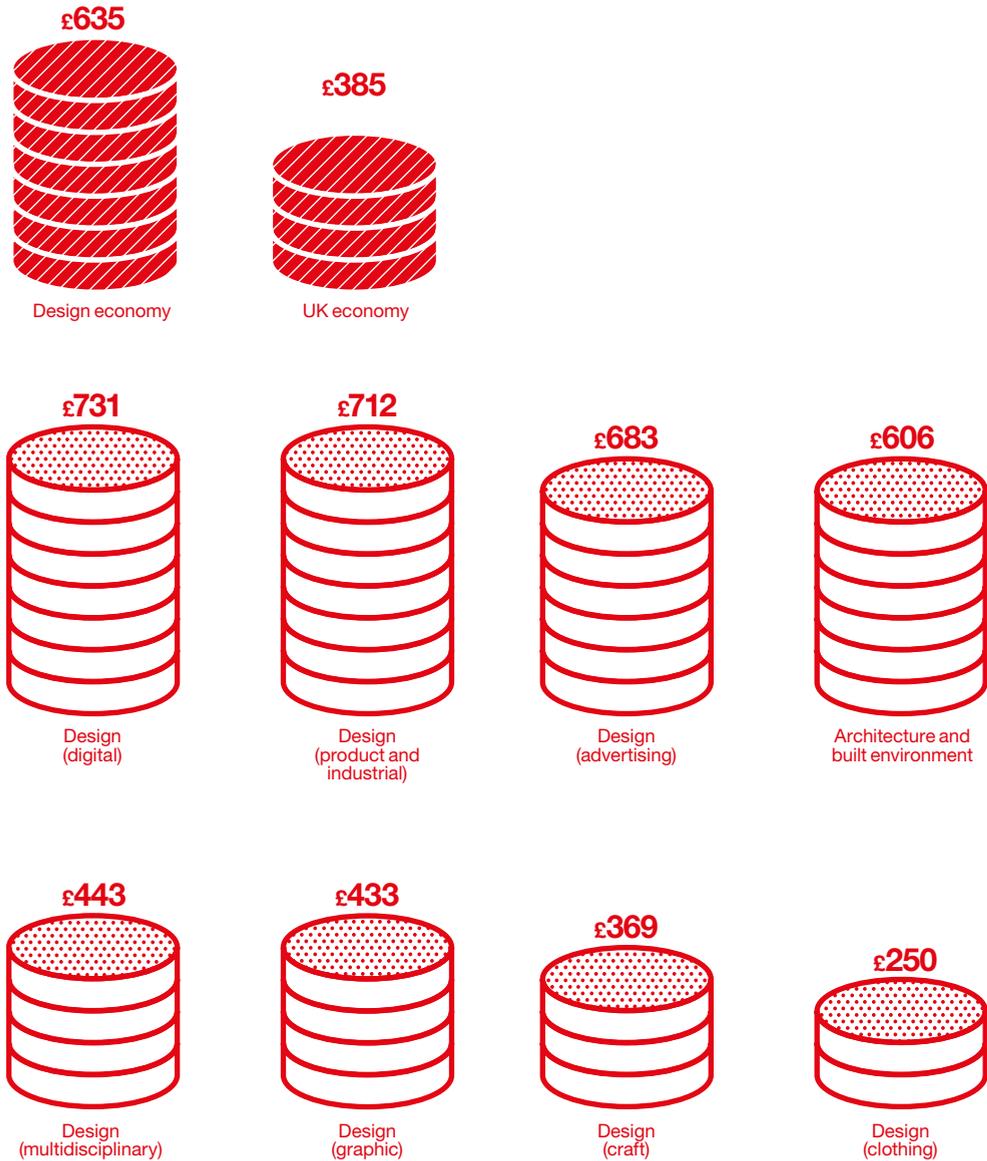
- 27.1% of designers are self-employed compared with 14.7% of the workforce as a whole²⁷
- The design subsectors with the highest levels of self-employment are clothing (51.2%) and graphic (48.1%). Subsectors with the lowest levels of self-employment are product and industrial (8.8%) and digital (13.3%)
- Designers are more likely than average to work on a freelance basis. 22.3% of self-employed designers describe their source of income as freelance work, compared with 13.8% of all self-employed people in the UK
- Self-employed designers are also more likely than average to work alone. Only 9.5% of self-employed designers have employees, compared with 16.9% of all self-employed people
- Designers are less likely than average to work part-time: only 14% of designers are part-time compared with 27% of the UK workforce as a whole.²⁸ This proportion has changed little in the last five years. Subsectors with the highest levels of part-time work are craft (27% of designers work part-time) and multidisciplinary (21.5%).

All of this indicates a dynamic part of the economy responding to increased demand for its services. Going forward it remains to be seen what support will be available for these small businesses and freelancers to grow and become an even more important part of the economy.

^{26, 27 and 28} ONS (2015) Annual Population Survey 2014

Chart 7: Average weekly wages, 2014

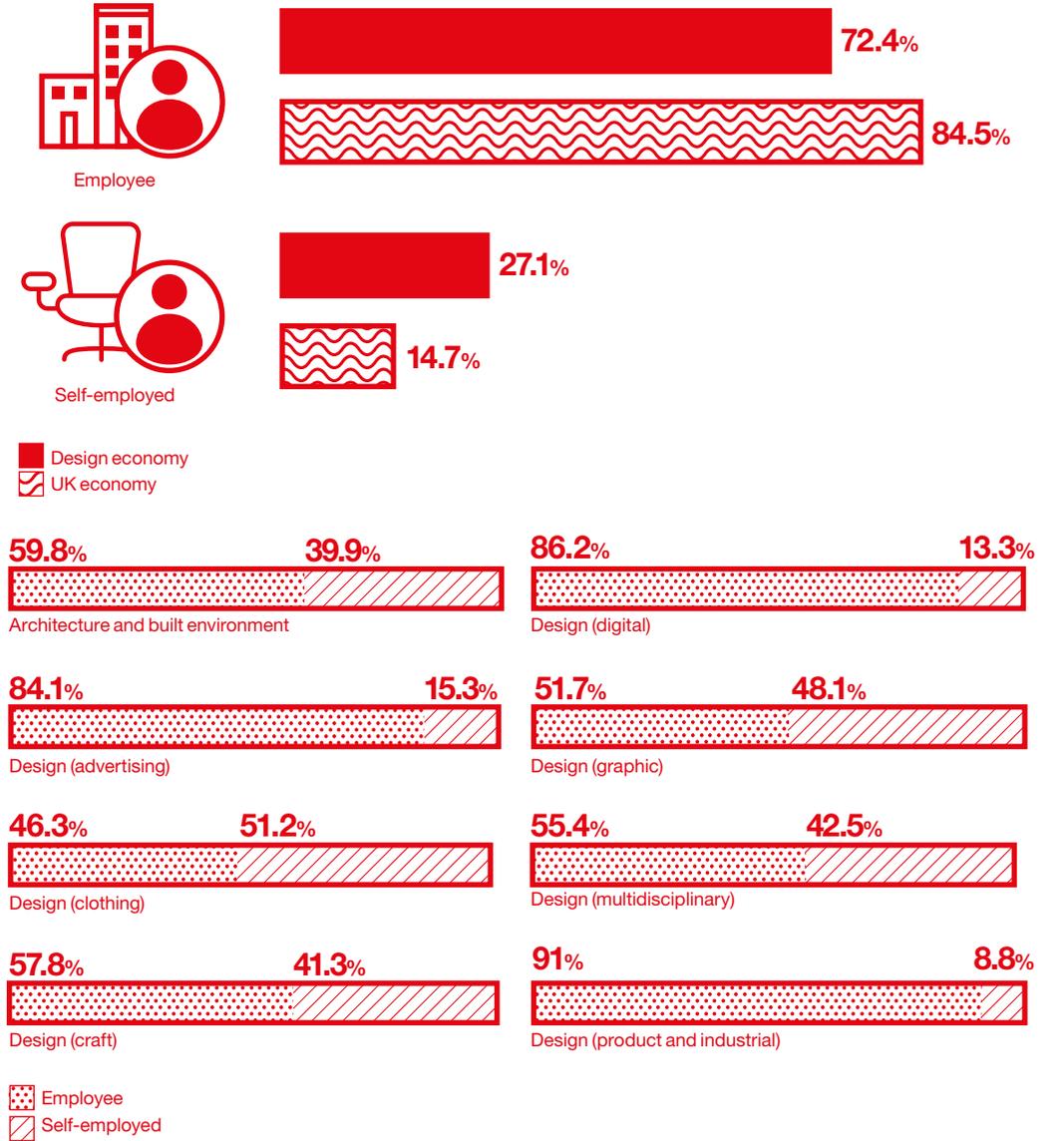
Design economy (n=1,313,900) and UK economy (n= 30,453,900)



ONS (2015) Annual Population Survey 2014

Chart 8: Employment status, 2014

Design economy (n=1,313,900) and UK Economy (n= 30,453,900)



Notes: A small percentage of the design workforce (0.5%) is employed in government employment and training programmes or are unpaid family worker. The equivalent value for all sectors is 0.8%

Source: ONS (2015) Annual Population Survey 2014

The use and under-use of design across different sectors

Design is used and valued in a variety of industries and sectors. This chapter examines the different sectors in which design plays a key role, as well as uncovering those sectors where there is further potential for the increased use of design.

The largest user of design across the economy is the information and communication sector, with designers accounting for 21.7% of the workforce and 23.6% of the sector's wage bill.

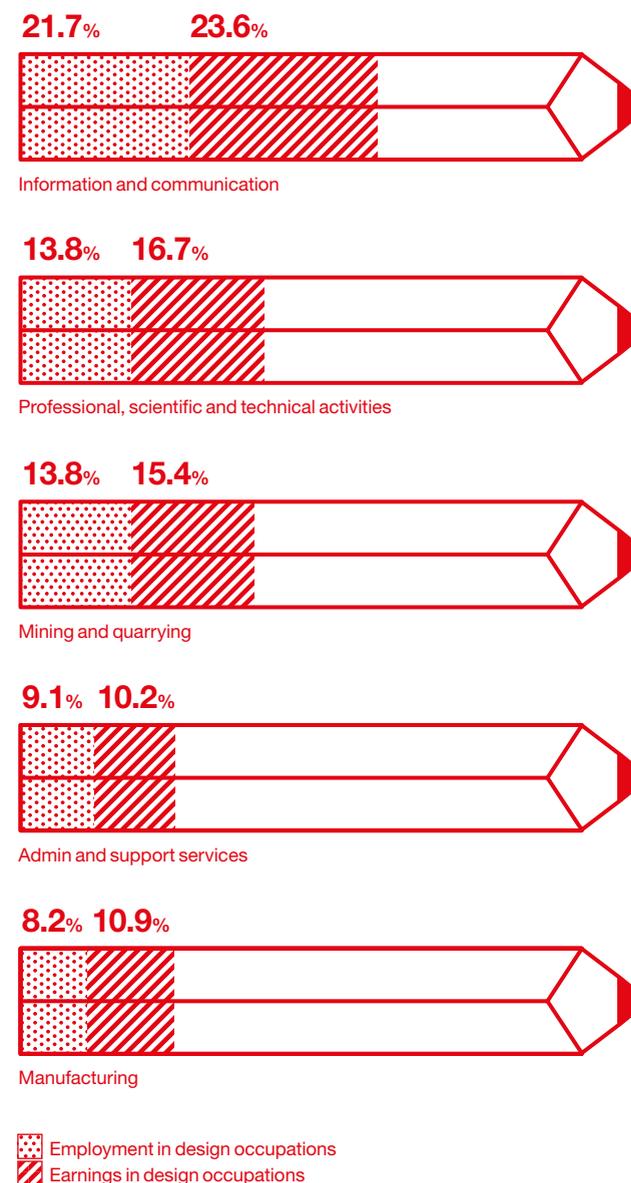
Following this, professional and technical services and mining and quarrying are the next most frequent employers of designers, with designers accounting for 13.8% of each sector's workforce and approximately 16% of each sector's wage bill. The definition for this research includes design engineers which means we are now able to understand the crucial role of designers in industries such as mining and quarrying, which would not normally be considered. The top five sectors which employ designers are represented in Chart 9.

Manufacturing sectors tend to employ between 5% and 10% of the workforce in design roles (with a small number employing up to 15%). However, our research found that there is greater variation in the employment of designers in service sectors, with peaks of concentration in certain industries.

For example, Chart 10 shows that designers account for around one third of the workforce in computer programming and consultancy, architectural and engineering services and professional and technical services. This is likely to reflect the key role of designers in the design and specification of products and processes across the manufacturing sector, and the emerging role of designers in influencing service provision, alongside the pivotal role that designers already play in some service sectors.

In terms of remuneration, as might be anticipated, designers tend to be valued more highly in industries that employ fewer of them. However, it is not necessarily the case that a small number of designers in a sector means they are paid the best wages. For example, as Chart 11 illustrates, manufacture of food products shows a low proportion of the workforce employed in design roles, and offer designers a weekly salary of only £315.

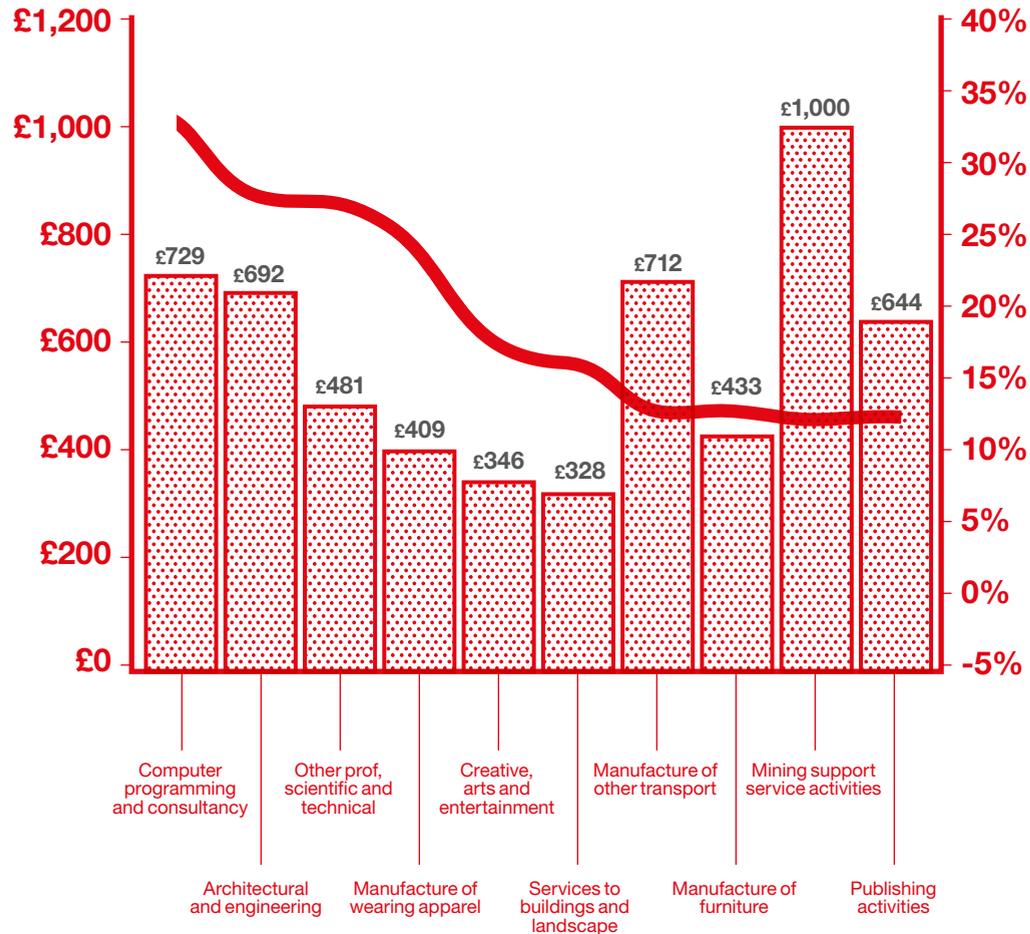
Chart 9:
Employment and wages in design occupations, as a proportion of the total in each sector, 2014



Note: Other sectors includes those sectors where employment and earning were less than 2% of the total sector. Sectors included in this category are real estate activities, transport and storage, agriculture, forestry and fishing, education, health and social work, accommodation and food services

Source: ONS (2015) Annual Population Survey 2014

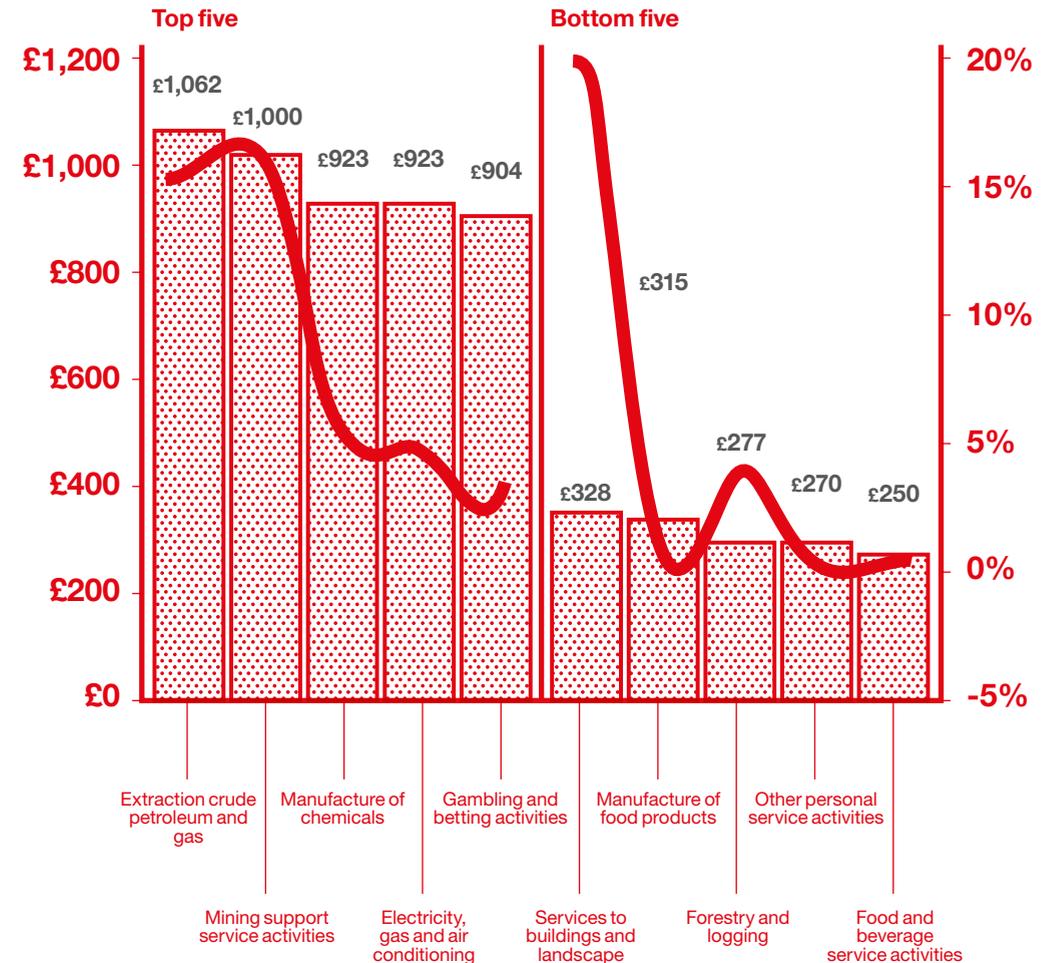
Chart 10:
Top ten industries employing designers compared to average weekly salaries for designers, 2014



Designer average weekly salary (primary axis)
 Designers as a proportion of total workforce (secondary axis)

Source: ONS (2015) Annual Population Survey 2014

Chart 11:
Top five and bottom five industries in terms of weekly salary, compared to proportion of workforce employed as designers, 2014



Designer average weekly salary (primary axis)
 Designers as a proportion of total workforce (secondary axis)

Source: ONS (2015) Annual Population Survey 2014

Design hotspots

The design economy is spread across the UK, though some cities and regions have embraced design more than others. This chapter takes a closer look at the design hotspots across the UK, showing which areas most benefit from design, and in which areas clusters of designers are emerging.

Regional distribution

Design is concentrated in London and, to a lesser extent, the South East of England. More than one in four design-intensive firms, and one in five people working in the design economy, are found in London.

Population of design-intensive firms by region

London has the highest number of design-intensive firms in the UK, with design-intensive firms also accounting for a considerable share of the capital's total business population. London accounts for 28.2% of the UK's design-intensive firms, compared with 16.9% of all firms; the South East region has 18.3% of the UK's design-intensive firms, compared with 15.2% of all firms.

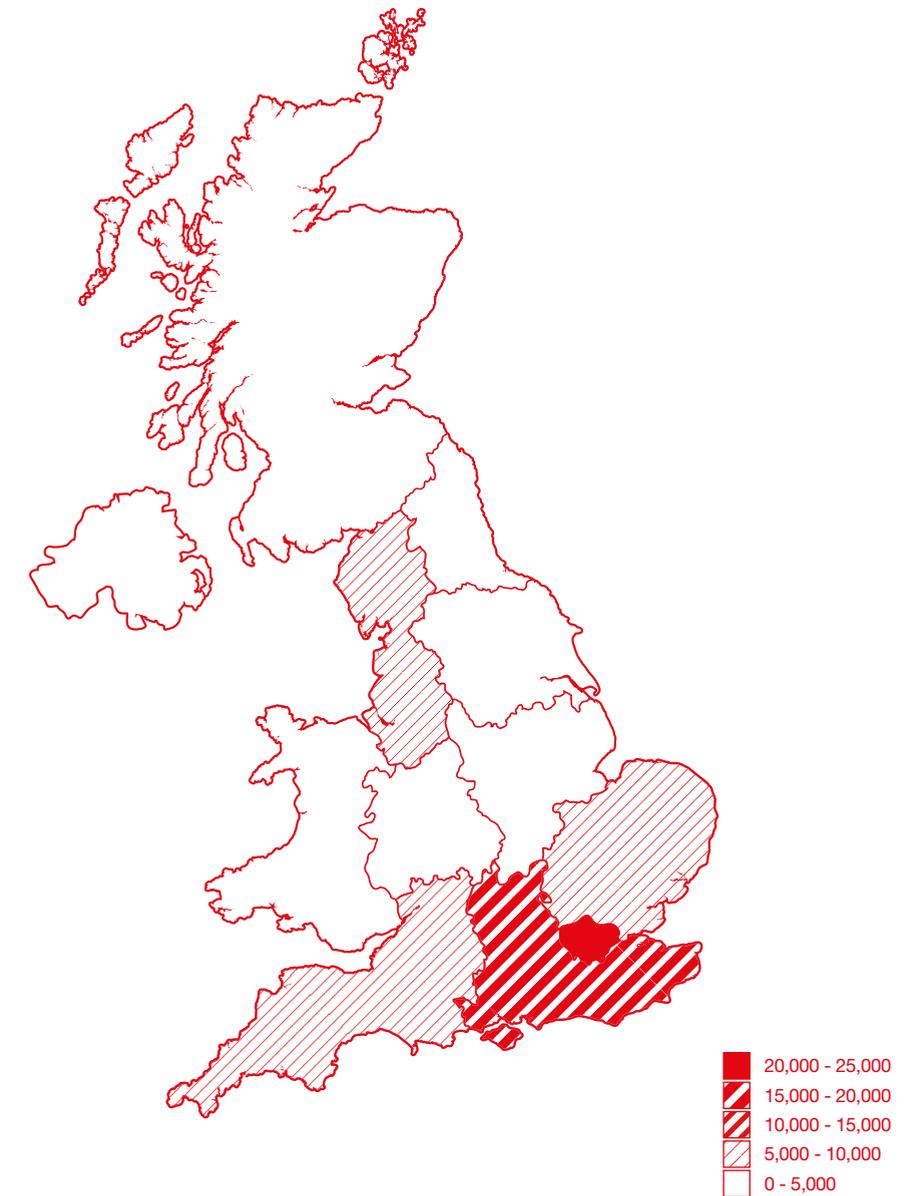
London has a higher number of firms in all design industries than other UK regions, except in product and industrial design where numbers are higher in the South-East, East and South West. 4.4% of firms

in London and 3.2% of firms in the South East are design-intensive firms, compared with an average 2.7% of all UK firms.

The lowest numbers of design-intensive firms are found in Northern Ireland (1.6% of the UK's design-intensive firms), the North East (2%) and Wales (2.2%).

The number of design-intensive firms has increased in all regions except Northern Ireland, but has risen faster than average in London and the South-East. The number of design-intensive firms in London increased by 72.7% between 2010 and 2014, while the number in the South East rose by 54.1%, compared with an average increase across the UK of 51%.

Figure 6:
Design-intensive firms by region, 2014



➤ Case study: Naylor Industries

Naylor Clayware started in Yorkshire in 1890 as a manufacturer of clay sewer pipes. By the mid-1990s, the business was facing extinction due to a construction industry recession and the erosion of the clay pipe market by plastic materials.

The company addressed the need for new income streams by launching a range of fresh products including the Yorkshire Flowerpot – a frost-proof, British-made terracotta pot. Entering a consumer-oriented market was unfamiliar territory and the company contacted Design Council to seek help in developing a marketing strategy.

The company had established an initial product range, but through a series of meetings, Design Council was able to pinpoint two weaknesses in the company's approach:

- a need for a more systematic approach to product development
- a need for clearer branding.

Design Council brought in an external branding consultant to clarify the strength of the flowerpot offering, highlighting the 'Britishness' and quality of the product.

With Design Council support in place, there was a major overhaul of business name, logo, merchandise and marketing material. The product's durability was encapsulated in a new proposition for customers – a lifetime guarantee against frost damage – and a blueprint was developed for new product development. Flowerpot sales increased dramatically, safeguarding the employment prospects in a 125-year-old business.

The launch of the Yorkshire Flowerpot has helped the company grow and become increasingly international. Sales grew rapidly to £2m by 2012. Current export sales across the Naylor group are £5m – over 10% of group turnover – and growing fast. With the development of export markets as far afield as North America, Scandinavia and Japan, sales are expected to exceed £3m in 2015. The company now manufactures some 300,000 pots a year, making it Britain's largest manufacturer of clay pots. The company has also won Insider (2013) and EEF (2015) awards for exporting, was listed in the Sunday Times 'International Track 200' survey and won the HSBC's Global Connections award for most dynamic MMC business in the north/Scotland region.

Source: Design Council Case studies. designcouncil.org.uk/resources/case-study/naylor-industries



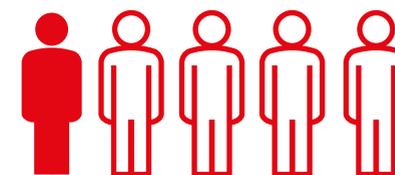
Employment by region

Reflecting trends in firm numbers, London and the South East account for the highest shares of design employment (20.4% and 17.6% respectively). Northern Ireland (1.8%), the North East (2.5%) and Wales (2.9%) have the smallest shares of design employment.

Design employment has also risen faster in London and the South East than elsewhere in the UK. The design workforce grew by just under 40% in both regions between 2010 and 2014, almost twice the rate of growth across the UK as a whole (21.7%). Scotland and Northern Ireland had little change in the size of their design workforce over the same period, whilst Wales a relatively small increase (6.5%).³³



1 in 4 design-intensive firms



1 in 5 people working in the design economy, are found in London

Finance by region

Total turnover among design-intensive firms is significantly higher in London and the South East than other UK regions. London accounts for 35.3% of total turnover among design-intensive firms, while the South East accounts for a further 23.6%. By comparison, the next most significant region in terms of total design turnover is the South West, which accounts for 6.9% of total turnover. The North East accounts for just 0.5% of total design turnover in the UK.

Total design turnover grew fastest in Wales (an increase of 89.1% between 2011 and 2013, compared with the UK average of 7.5%). The North West, East Midlands, South West, Northern Ireland and Yorkshire and Humberside all saw higher than average rises in design turnover. Design turnover in London rose at a similar rate (7.2%) to the UK average. Design turnover fell in the West Midlands, South East and East of England, but most significantly in the North East. The fall in turnover in the North East (61.2%) was most significant between 2012 and 2013.³⁴

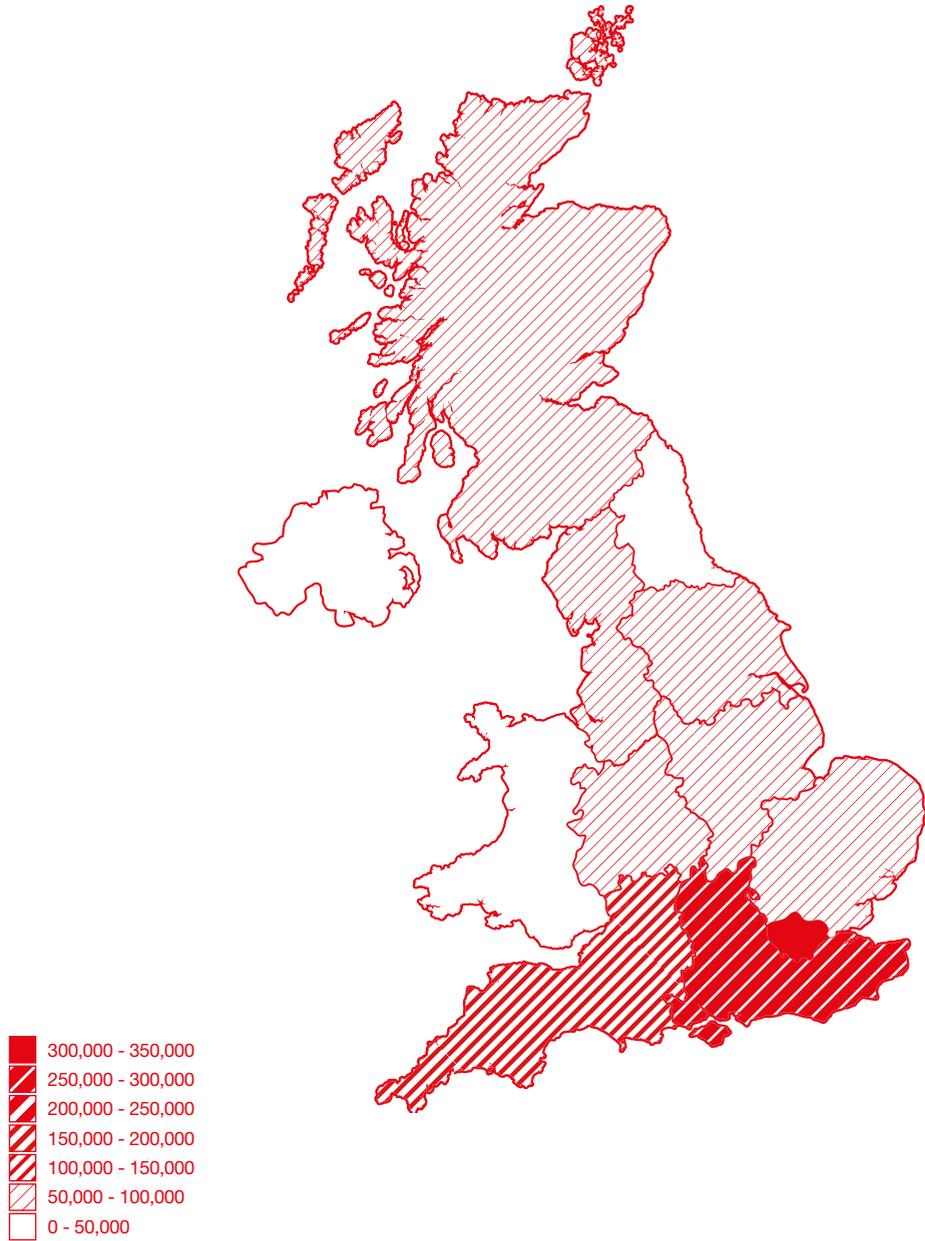
London and the South East account for a higher proportion of design GVA than other regions (23.4% and 18.3% respectively). The South West and East of England, the next largest contributors to design GVA, each account for around 9.5% of design GVA. Northern Ireland makes the smallest contribution to design GVA (1.3%).³⁵

Design GVA rose faster in the South East than in other UK regions: an increase of 21.3% between 2011 and 2013, compared with an average of 14.2% across the UK as a whole. Design GVA grew only slightly slower in the North West and South West regions: each saw an increase of just over 19% in the same period. Design GVA in London rose at a similar rate (14.8%) to the national average. Design GVA fell by 36.6% in Northern Ireland.³⁶

³³ Annual Population Survey, 2010–2014.

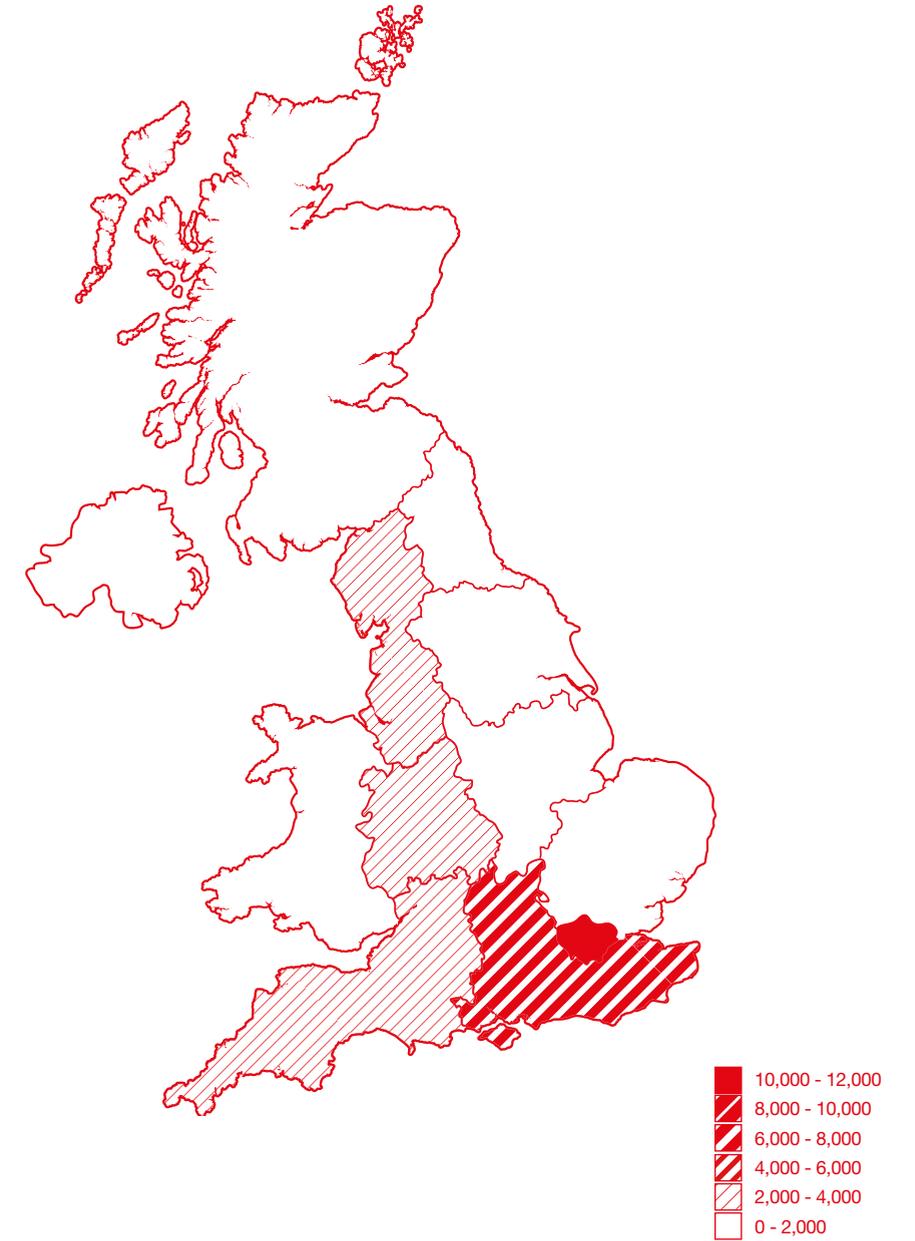
^{34, 35, 36} ONS (2014) Annual Business Survey 2008–2013

Figure 7:
Design employment by region, 2014



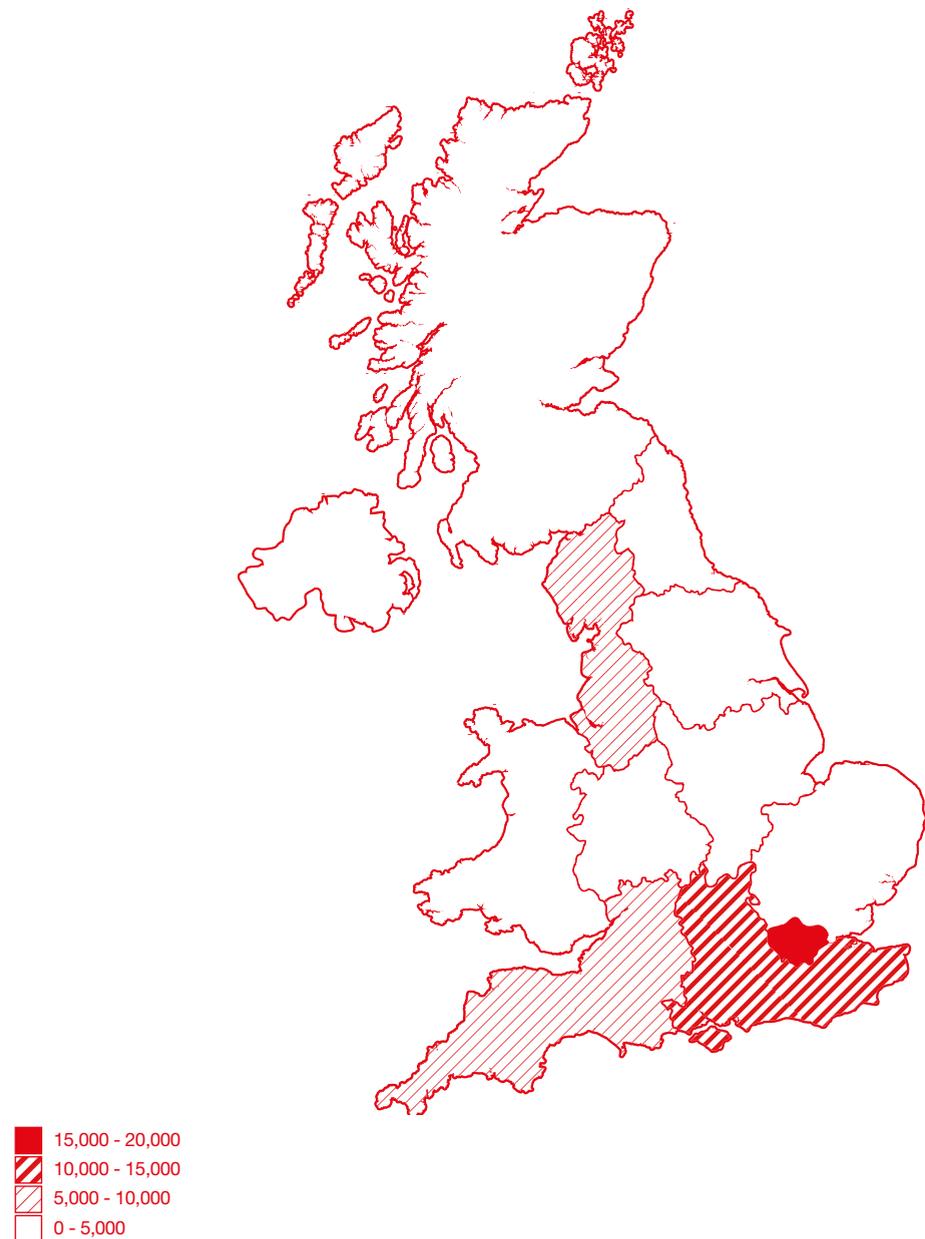
Source: ONS (2015) Annual Population Survey 2014

Figure 8:
Design turnover by region, 2014



Source: ONS (2014) Annual Business Survey 2008-2013

Figure 9:
Design GVA by region, 2014



Source: ONS (2014) Annual Business Survey 2008-2013

Productivity by region

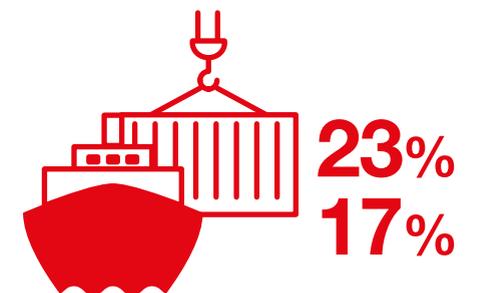
Reflecting their significant contribution to design GVA, productivity among design workers is highest in London and the South East (£56,200 and £52,600 per head, respectively). Design workers in the East of England (£48,500 per head) and South West (£48,200 per head) are the next most productive.³⁷

The least productive designers are those in Northern Ireland (£36,400 per head).³⁸ Productivity among designers in Northern Ireland fell by 23.4% between 2011 and 2013. Scotland also saw design productivity decline, by 4.8% over the same period. Productivity among designers in Wales showed the most significant increase, rising by 16.3% compared with an average increase of 3.4% across the UK as a whole.³⁹

Exports by region

London and the South East also make the largest contributions to design-influenced exports, accounting for 23% and 17.4% of the total value of design-influenced exports respectively. The South West and East of England are the next largest exporters, each accounting for just over 9.5% of total exports. Northern Ireland (1.4% of design-influenced exports), the North East (2.3%) and Wales (2.8%) make the smallest contributions to design-influenced exports.⁴⁰

Between 2011 and 2013, the East Midlands saw the largest rise in the value of design-influenced exports (20.4%), though this was only slightly higher than in the North West, Wales, the South East and South West (all just under 20%). The value of design-influenced exports rose more slowly than average in London (7.4%, compared with growth of 10.9% across the UK as a whole). Design-influenced exports fell slightly in the North East (by 1.2%), but more significantly in Northern Ireland (by 35.1%).⁴¹



London (23%) and the South East (17.4%) make the largest contributions to design-influenced exports

³⁷ ONS (2014) Annual Business Survey 2008-2013; ONS (2015) Annual Population Survey 2014

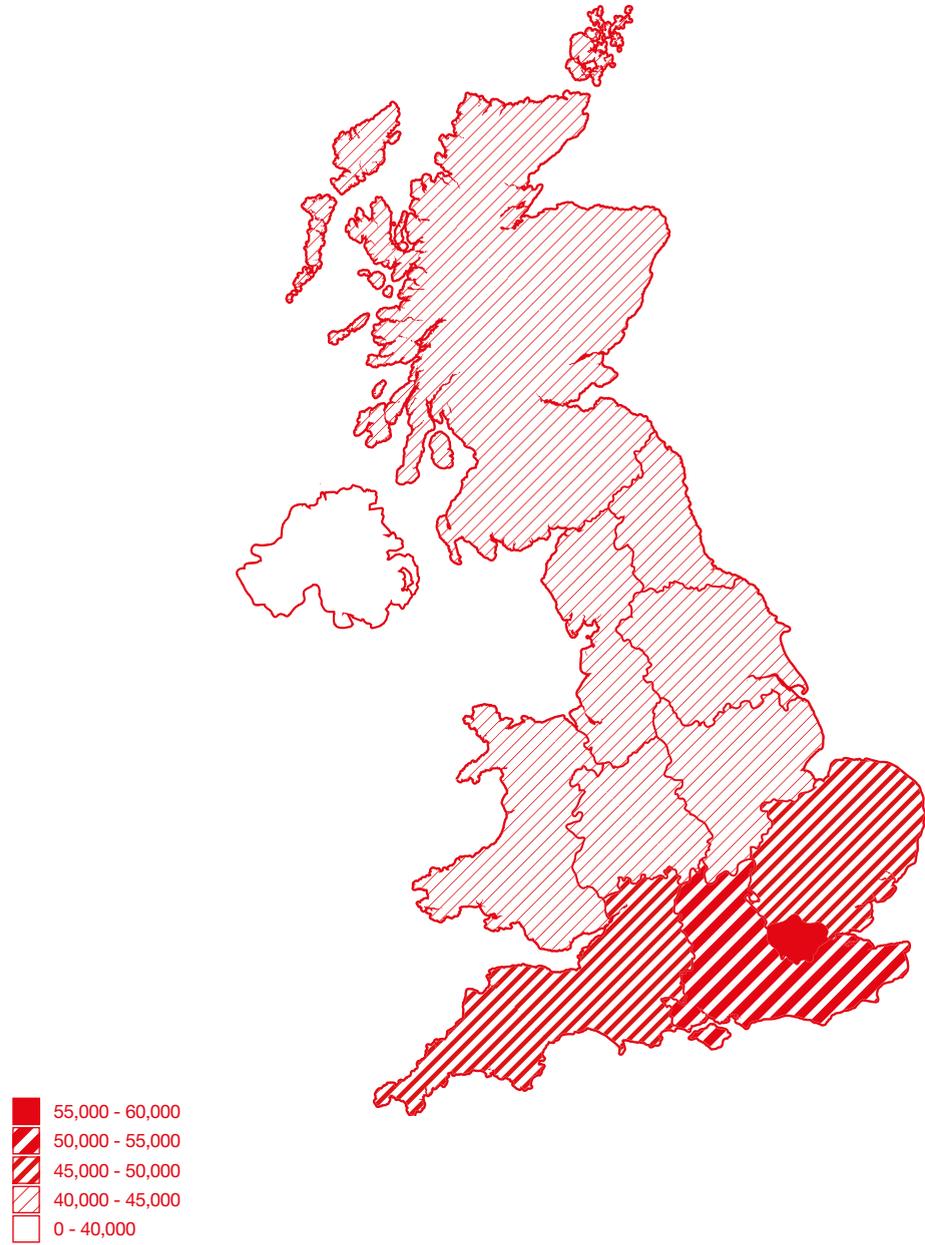
³⁸ ONS (2014) Annual Business Survey 2008-2013; ONS (2015) Annual Population Survey 2014

³⁹ ONS (2014) Annual Business Survey 2008-2013; ONS (2015) Annual Population Survey 2014

⁴⁰ United Nations (2015) UN Commodity Trade Statistics database 2009-2013; ONS (2015) International Trade in Service 2013

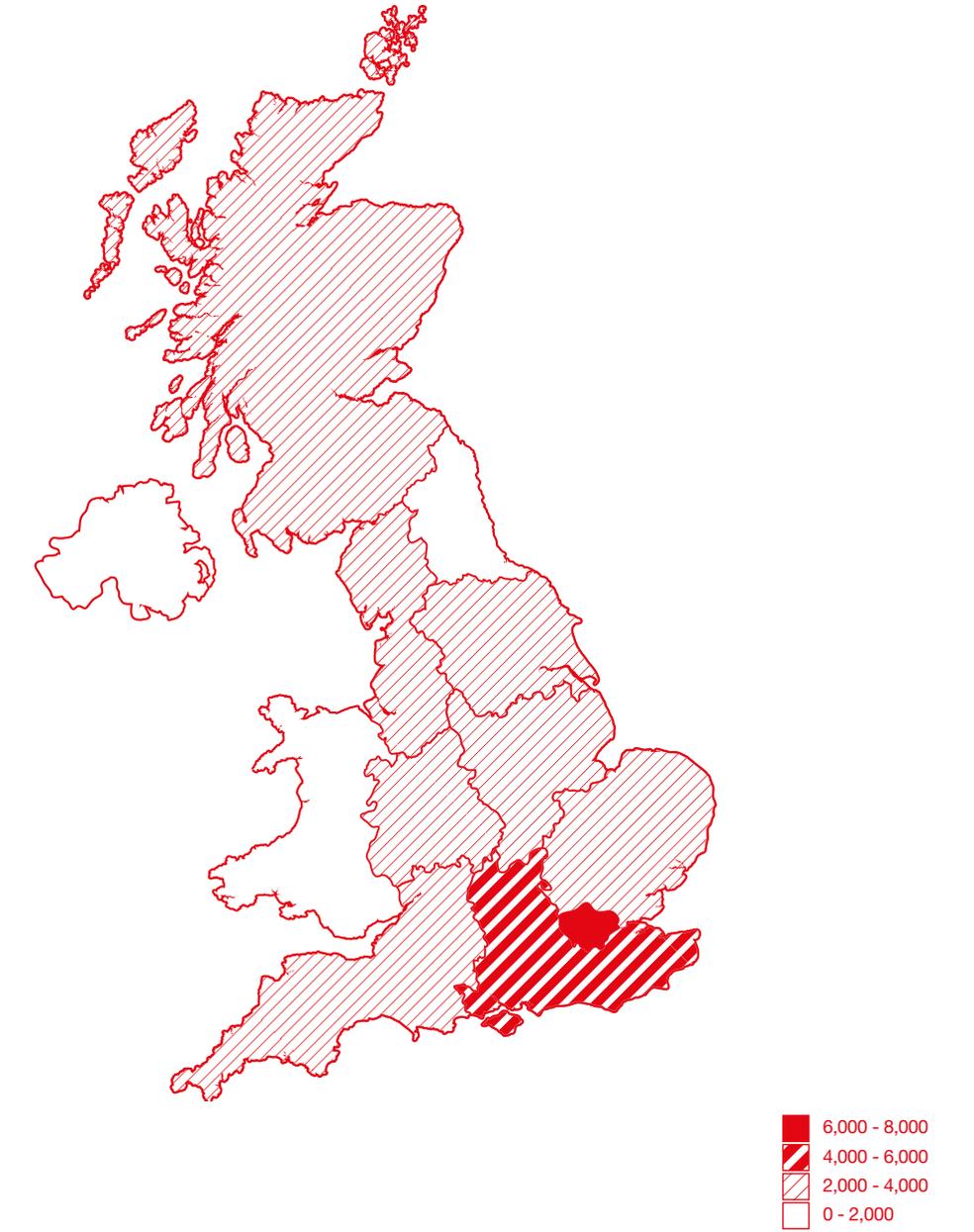
⁴¹ United Nations (2015) UN Commodity Trade Statistics database 2009-2013; ONS (2015) International Trade in Service 2013.

Figure 10:
Design productivity by region, 2013



Source: ONS (2014) Annual Business Survey 2008-2013; ONS (2015) Annual Population Survey 2014

Figure 11:
Design-influenced exports by region, 2013



Source: United Nations (2015) UN Commodity Trade Statistics database 2009-2013; ONS (2015) International Trade in Service 2013

➤ Design clusters

Location quotient (LQ) is a way of showing how concentrated a particularly industry or occupation is within a geographic area, compared to the rest of the country. Our research used this approach to understand how an area's economy would look if it were the same size as the UK, revealing areas with more – or fewer – firms and employment within the design economy than would be expected.

A high LQ indicates specific areas of strength. For instance an LQ of 1.0 can indicate that the concentration of firms within an area matches the national average. An LQ of 1.5 means that there is 50% more of a particular activity in the area than one might expect to find. Conversely, an LQ of 0.5 means that there is 50% less of an activity in the area than one might expect.

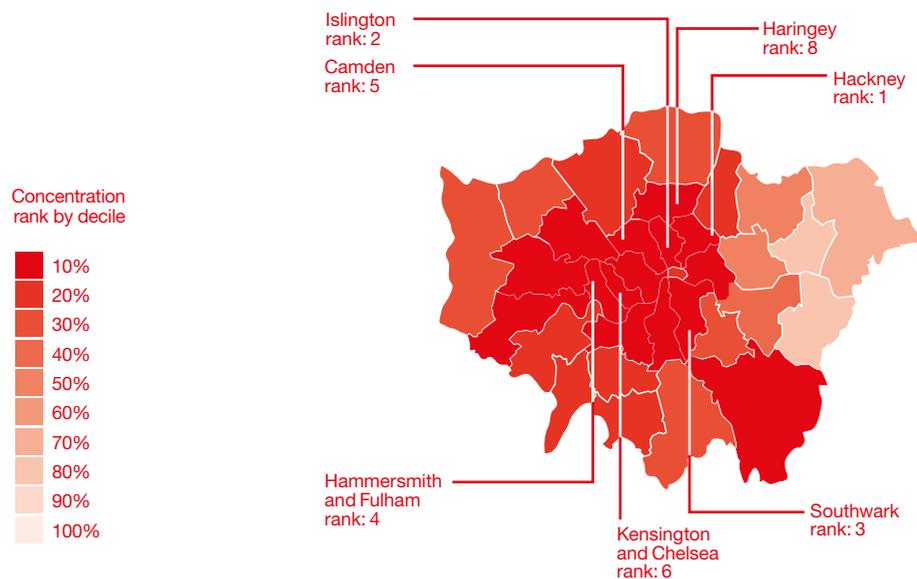
The analysis in this section therefore takes account of firm numbers and employment

in design, as well as their associated LQs, through a 'concentration rank' which assesses both the size and concentration of design in each local authority in Great Britain.⁴²

Figure 13 shows the relative concentration of design activity across the country. The concentration of design activities at local authority level reflects the regional distribution of design.

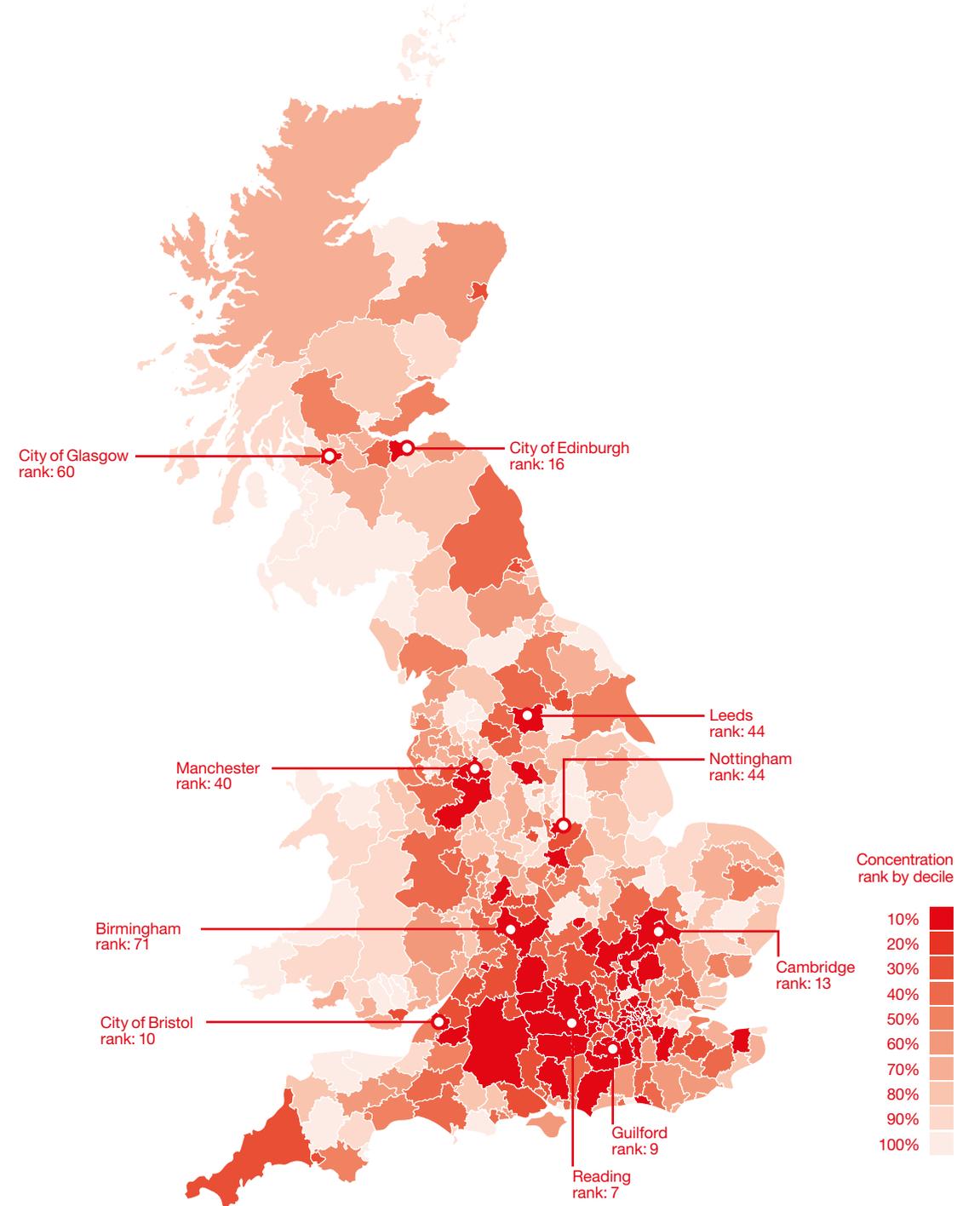
Figure 12 shows that seven of the 10 local authorities with the most significant concentrations of design activity are found in London. The other three areas are also in southern England, and include Reading and Guildford, which have healthy design economies predominantly characterised by graphic and web design, and Bristol, which in addition to web and graphic design also has a number of firms and designers working in retail design.

Figure 12: Overall concentration of design activity in London 2014



⁴² Employment data is not available at local authority level for Northern Ireland. Northern Ireland is therefore not included in the analysis

Figure 13: Overall concentration of design activity in Great Britain 2014



Source: ONS (2015) UK Business Counts 2010-2014; ONS (2015) Annual Population Survey 2014.. Rank is within Great Britain

Table 12: Top 10 local authorities with highest overall concentration of design, 2014

Local authority	Region	Number of design-intensive firms	Firm LQ	Design employment	Employment LQ	Intensity rank (of 380)
Hackney	London	1,290	3.60	10,600	2.23	1
Islington	London	1,245	2.86	12,900	2.02	2
Southwark	London	990	2.59	31,600	1.52	3
Hammersmith and Fulham	London	695	2.09	9,200	1.87	4
Camden	London	1,420	2.01	19,700	1.51	5
Kensington and Chelsea	London	700	1.99	9,600	1.72	6
Reading	South East	330	1.73	14,100	2.15	7
Haringey	London	510	1.88	7,500	1.86	8
Guildford	South East	335	1.66	8,700	2.04	9
Bristol	South West	630	1.28	31,200	1.78	10

Source: ONS (2015) UK Business Counts 2010-2014; ONS (2015) Annual Population Survey 2014

Table 12 shows, besides Bristol, significant concentrations of design activity are found outside London and the South East in Cambridge (East of England, ranked 13th of 380 local authorities) and Edinburgh (Scotland, 16th). The most significant concentration of design activity in the north of England is found in Manchester (North West, 40th), with Leeds (Yorkshire and Humber, 44th) close after.

The analysis suggests emerging and growing clusters in a number of local authorities outside London, reflected in growth in both the number of design-intensive firms and design employment, and an increasing concentration of design activity within the local economy.

Table 13 illustrates the 10 local authorities who have experienced the most positive change in their 'concentration rank' over a five year period. Hinckley and Bosworth in the East Midlands is the local authority which has experienced the greatest change, moving up from 340th to a rank of 170th in five years. Other local authorities experiencing significant change in the concentration of design activity include Hastings (South-East), Blaby (East Midlands), Havant (South-East) and South Buckinghamshire (South-East).

Future research is required to ascertain the reasons for these changes, though desk research suggests the local economy in Hinckley and Bosworth has experienced substantial growth and investment in recent years, and is the fastest growing area within Leicestershire County. The area is also home to the MIRA Technology Park, which houses businesses such as Bosch, Jaguar-Land Rover and a number of well-known tyre brands such as Continental, Michelin and Pirelli, all of whom will use designers in their work.

Table 13: Top 10 local authorities with greatest positive change in concentration rank of design, 2014

Local authority	Region	2010 rank	2011 rank	2012 rank	2013 rank	2014 rank	Change in rank (Number of places)
Hinckley and Bosworth	East Midlands	340	*	208	113	170	+170
Hastings	South East	355	*	252	209	189	+166
Blaby	East Midlands	302	136	145	188	155	+147
Havant	South East	292	279	292	286	146	+146
Brentwood	East	222	162	*	84	78	+144
South Bucks	South East	238	*	146	98	94	+144
Wirral	North West	291	253	253	195	150	+141
South Staffordshire	West Midlands	287	138	156	119	149	+138
Epping Forest	East	304	231	138	173	166	+138
South Lakeland	North West	294	211	216	154	161	+133

Source: ONS (2015) UK Business Counts 2010-2014; ONS (2015) Annual Population Survey 2014

What next?

The Design Economy research reveals, for the first time, the full contribution that design makes not only to the UK's economy. Design Council firmly believes design can deliver growth, efficiencies, quality, sustainability, better quality of life and stronger communities – beliefs that are supported by the evidence in this report.

Going forward, to continue our research, and as part of our ongoing mission to champion the role and importance of design, Design Council and our partners in business, government and civil society, will be focusing on a number of key questions:

1. How can the UK move from being world class, to being the world leading in design?

The UK's design economy has many world-class aspects, but it is yet to reach its full potential. Design's contribution to goods and services exports in 2013 was £34bn – 7.3% of all UK exports. This compares favourably to the value of services exported by the UK creative industries alone (£17.3bn in 2012). Despite this, the UK still lags behind its international competitors. As we face up to new global economic realities, design will play an ever more important role in ensuring our economy remains competitive. What can be done to enable the UK to move from being world class in design, to being the world leading?

2. How can we spread design skills more widely across sectors where design is underused?

Many sectors of the wider UK economy have experienced the benefits of great design. Some sectors have yet to fully realise its potential. For sectors such as health and social work, and education, this is especially pertinent, given the continued pressures on resources and requirements for improved efficiencies and innovation. Service design could play an even greater role in these sectors. How can we help those sectors where design is underused to fully realise its potential benefits?

3. How can we spread design skills more widely across the country?

The design economy is, perhaps inevitably, strongly linked to the capital city, but more could be done to develop the potential of design in other cities and regions across the UK. This in turn could contribute to the wider rebalancing of the economy, which is much needed. We believe design can help drive a flourishing private sector and innovative public services outside London. How can we best support other cities and regions to grow their design economies and encourage 'design clusters'?

4. How do we improve the diversity of the design workforce?

Although incredibly productive and making a valuable contribution to the UK, the design economy has a notable gender imbalance. Only two in every ten designers are women. Yet 'design thinking' has shown us the value of having a diverse range of voices in the room, increasing the pool of talent and flow of ideas. For the design economy and the UK more widely to continue to prosper, it is essential that we bring a greater range of people into design careers, particularly into the digital and manufacturing subsectors. How do we ensure the design workforce is more diverse and inclusive and, in doing so, further improve the value of design?

Design Council look to conduct this research on a more regular basis, including in-depth analysis into particular sectors and topics. We look forward to contributing further evidence on the value of design and promoting the benefits of design for everyone.

If you would like to get involved, please visit:

designcouncil.org.uk/designeconomy

[@designcouncil](https://twitter.com/designcouncil) [#designeconomy](https://twitter.com/designcouncil)

Appendix 1: Technical appendix

All analysis in this report is based on the most recent data available at the time of writing. The latest available data for some indicators (firm counts and employment) relates to 2014, while the latest for other indicators (GVA, turnover and exports) relates to 2013. The data sources used are primarily those used in the Creative Industries Economic Estimates, published by the Department for Culture, Media and Sport (DCMS). The methodology for this research is designed to reflect that used by DCMS

This technical appendix outlines the processes used for each analysis reported through this report.

Identifying designers

To identify the occupations of those working in design, we reviewed a range of existing literature and consulted with key stakeholders across design. Using these outcomes we worked through a process of review and selection of best fit Standard Occupational Classification (SOC) codes to identify designers within ONS data, who are counted in the analysis regardless of the industrial sector they work in.

Table 14: Detailed breakdown of design occupations

Design subsector	SOC	SOC description	Example designer
 Architecture and built environment	2121	Civil engineers	Building engineer, structural engineer
	2431	Architects	Architect, architectural consultant, landscape architect
	2432	Town planning officers	Planning officer, town planner
	2435	Chartered architectural technologists	Architectural technologist
	3121	Architectural and town planning technicians	Architectural assistant, construction planner
	3122	Draughtspersons	CAD operator, cartographer
	5113	Gardeners and landscape gardeners*	Garden designer, gardener, landscape gardener
 Design (multidisciplinary)	3422	Product, clothing and related designers	Fashion designer, product designer, interaction designer
 Design (advertising)	2473	Advertising accounts managers and creative directors	Advertising manager, campaign manager, brand identity
 Design (craft)	5211	Smiths and forge workers	Blacksmith, farrier
	5411	Weavers and knitters	Carpet weaver, knitwear manufacturer
	5441	Glass and ceramics makers, decorators and finishers	Glass blower, potter
	5442	Furniture makers and other craft woodworkers	Antiques restorer, cabinet maker
	5449	Other skilled trades n.e.c.	Engraver, goldsmith

 Design (digital)	2135	IT business analysts, architects and systems designers	Business analyst, systems analyst, technical architect
	2136	Programmers and software development professionals	Database developer, games programmer, software engineer
	2137	Web design and development professionals	Internet developer, web designer, user interface designer
 Design (clothing)	5414	Tailors and dressmakers	Fabric cutter, tailor
 Design (graphic)	3411	Artists*	Illustrator, portrait painter, sculptor
	3421	Graphic designers	Graphic artist, graphic designer
 Design (product and industrial)	2122	Mechanical engineers	Aerospace engineer, automotive engineer
	2126	Design and development engineers	Design engineer, research and development engineer
	2129	Engineering professionals n.e.c.*	Metallurgist, project engineer

*Subject to the following exclusions: Employment/value in SOC 5113 is only included only where this occurs within SIC 71.11 and 81.30. Employment/value in SOC 3411 is only where people are working outside of SIC 90.03 and excludes those working in an educational setting. Employment/value in SOC 2129 is only included for those working in product and industrial manufacturing industries (SIC 13-32), other creative industries (as per the DCMS definition) or those identified as design industries)

➤ Counting firms across the design economy

Firm counts are taken from the UK Business Counts, a public version of the Inter-Departmental Business Register (IDBR) available from Nomis. The IDBR is a comprehensive dataset of UK businesses, compiled by the Office for National Statistics (ONS), which covers 99% of UK economic activity. It holds records of approximately 2.1m businesses. It does not cover very small businesses without VAT or PAYE schemes (self-employed individuals and businesses with low turnover and without employees); some non-profit making organisations are also not included.

➤ Calculating design employment

Employment estimates are taken from the Annual Population Survey (APS). The APS is the largest ONS household survey, and is based on the Labour Force Survey but includes a boosted sample designed to provide greater reliability at smaller geographical levels. Each survey includes around 130–140,000 individuals who are in employment (either employed or self-employed). The survey provides a wide range of indicators including demographics, employment, education and health, though a relatively small number of variables are used in this report.

The report uses APS microdata, analysed using SPSS. Employment estimates include main jobs and second jobs. Estimates are weighted using the appropriate variables in each APS dataset.

➤ Financial calculations

Turnover and gross value added estimates are taken from the Annual Business Survey (ABS). The measure of gross value added used in this report is approximate gross value added (GVA), which is the measure recommended by the ONS when analysis at a detailed industrial level is required.

The ABS is the key ONS survey for understanding the detailed structure and performance of businesses across the UK, and is one of the main sources of business information in the UK National Accounts. Around 47–49,000 businesses are surveyed each year. Because the survey sample is taken from the IDBR, the survey only includes businesses with VAT and/or PAYE schemes. In addition, the ABS covers only the non-financial business economy. It includes the production, construction, distribution and service industries, and represents about two-thirds of the UK economy in terms of GVA.

Turnover estimates include design industries only. Turnover is measured in current prices (ie, figures are not adjusted for inflation).

GVA measures the contribution to the economy of each individual producer, industry or sector in the United Kingdom. GVA is closely linked to the more commonly used Gross Domestic Product (GDP):

$$\text{GVA} + \text{taxes on products} - \text{subsidies on products} = \text{GDP}$$

The ABS provides GVA figures for design industries only. This is apportioned to design and non-design occupations on the basis of their share of gross earnings in design industries. The earnings data used in this analysis are taken from the APS. Similarly, an estimate of the contribution to GVA of designers employed outside design industries is based on their share of gross earnings (derived from the APS). GVA is measured in current prices (ie, estimates are not adjusted for inflation).

Productivity figures are calculated by dividing GVA estimates by employment.

Export estimates are taken from the ONS International Trade in Services (ITIS) data and the UN Commodity Trade Statistics database (Comtrade).

ITIS collects data on UK resident companies' international transactions in services, combining data from survey and administrative sources. It provides data used by ONS to measure the UK's balance of payments and gross domestic product, as well as in input-output supply and use tables. ITIS is the only source used by DCMS to measure exports from the creative industries (the DCMS Creative Industries Economic Estimates cover service exports only).

Annual estimates from ITIS combine a quarterly survey (of around 1,100 businesses) and an annual survey (of around 14,500 businesses). ITIS data does not cover travel, transport, banking/financial institutions, higher education, charities and much of the legal profession.

Comtrade provides detailed global trade data. It is a repository of official trade statistics from countries around the world, including the UK. We use Comtrade to provide estimates of the value of design in the export of goods from the UK, to supplement service export estimates from ITIS. Comtrade is used in favour of data from ONS and HMRC because it provides a more detailed classification than other sources, which can be mapped to our design definition more easily.

Due to small sample sizes in ITIS, exports estimates for the design (craft) and design (clothing) subsectors are aggregated (for consistency with ITIS, Comtrade estimates for these subsectors are also aggregated).

As with GVA estimates, the design value of goods and services exports in non-design industries is apportioned based on the share of earnings in design occupations in these industries. The earnings data used in this analysis are taken from the APS.

Total UK export figures quoted in this report are the sum of goods export estimates from Comtrade and service export estimates from ITIS. These are not directly comparable to export figures in the UK Balance of Payments which include estimates for sectors not included in ITIS, derived from other sources such as the International Passenger Survey.

Exports data is not available at regional level from Comtrade. Due to sample sizes, ITIS data for design-influenced exports is not reliable at regional level. Regional exports estimates are therefore derived by apportioning the UK estimate based on the regional distribution of gross earnings in design occupations. The earnings data used in this analysis are taken from the APS.

➤ Identifying clusters

Cluster analysis combines firm counts, firm LQs, employment estimates and employment LQs for each location. Each of these four measures is ranked, and an average rank score calculated for each location. This average score is then itself ranked to give the overall concentration rank used in the analysis. Emerging clusters are identified by calculating the change in overall concentration rank between 2010 and 2014.

➤ Identifying design-active firms

Design-active firms are identified using criteria agreed with Design Council and the project steering group. Given the nature of the study it was necessary to focus on those measures by which it was possible to identify firms from open-source lists. The criteria used are:

- Firms registering new designs with the Intellectual Property Office
- Firms which have applied to the Intellectual Property Office for patents
- The top 50 firms which have registered trademarks with the Intellectual Property Office in 2014
- Top graduate employers for engineering, design and manufacturing graduates
- Firms who have won or been shortlisted for Design Business Association (DBA) Design Effectiveness Awards 2011–2015
- Firms which have accessed support from the Design Council's Designing Demand programme.

Financial data for each of the firms identified was extracted from TBR's unique business database Trends Central Resource (TCR), and validated by comparing with Companies House records. This validation process was to ensure accuracy, and completeness in capturing all of the firms' activities. This resulted in a list of 52 firms, spread across the sectors of interest. Performance in these firms was compared against sector averages based on data from the ABS and APS.

➤ Making international comparisons

Conducting an international comparison of the design sector is challenging. This is because countries have different definitions of design, national figures are unavailable or outdated or data points are just not comparable. These limitations, also acknowledged in the International Design Scoreboard, make it difficult to have a conclusive international comparison. Nonetheless we can still have some strong indications on the performance of the UK sector internationally. This also provides a solid case for further research to be undertaken in international comparisons of design sectors.

The following datasets were used for international comparisons:

- To compare different countries in terms of design registrations, data was analysed from the WIPO IP Statistics Data Center
- For comparisons of exports, the United Nations Conference on Trade and Development (UNCTAD) data was used
- For comparisons on business use of design, the European Commission's Innobarometer 2015 was used.

➤ Overlap between 'design economy' and 'creative economy' SIC definitions

Table 15 provides a detailed breakdown of how the methodology for this report overlaps with that used by DCMS for the Creative Economy research.

Table 15: Overlap between 'design economy' and 'creative economy' SIC definitions

SIC	SIC description	In design economy?	In creative economy?
1419	Manufacture of other wearing apparel and accessories	Yes	
1629	Manufacture of other products of wood; manufacture of articles of cork, straw and plaiting materials	Yes	
2341	Manufacture of ceramic household and ornamental articles	Yes	
2640	Manufacture of consumer electronics	Yes	
3212	Manufacture of jewellery and related articles	Yes	Yes
5811	Report publishing		Yes
5812	Publishing of directories and mailing lists		Yes
5813	Publishing of newspapers		Yes
5814	Publishing of journals and periodicals		Yes
5819	Other publishing activities		Yes

5821	Publishing of computer games	Yes	Yes
5829	Other software publishing	Yes	Yes
5911	Motion picture, video and television programme production activities		Yes
5912	Motion picture, video and television programme post-production		Yes
5913	Motion picture, video and television programme distribution		Yes
5914	Motion picture projection activities		Yes
5920	Sound recording and music publishing activities		Yes
6010	Radio broadcasting		Yes
6020	Television programming and broadcasting activities		Yes
6201	Computer programming activities	Yes	Yes
6202	Computer consultancy activities		Yes
7021	Public relations and communication activities		Yes
7111	Architectural activities	Yes	Yes
7311	Advertising agencies		Yes
7312	Media representation		Yes
7410	Specialised design activities	Yes	Yes
7420	Photographic activities		Yes
7430	Translation and interpretation activities		Yes
8552	Cultural education		Yes
9001	Performing arts		Yes
9002	Support activities to performing arts		Yes
9003	Artistic creation		Yes
9004	Operation of arts facilities		Yes
9101	Library and archive activities		Yes
9102	Museum activities		Yes

Table 16: Overlap between design economy and creative economy SOC definitions

SOC	SOC description	In design economy?	In creative economy?
1132	Marketing and sales directors		Yes
1134	Advertising and public relations directors		Yes
1136	Information technology and telecommunications directors		Yes
2121	Civil engineers	Yes	
2122	Mechanical engineers	Yes	
2126	Design and development engineers	Yes	
2129	Engineering professionals n.e.c.	Yes	
2135	IT business analysts, architects and systems designers	Yes	Yes
2136	Programmers and software development professionals	Yes	Yes
2137	Web design and development professionals	Yes	Yes
2431	Architects	Yes	Yes
2432	Town planning officers	Yes	Yes
2435	Chartered architectural technologists	Yes	Yes
2451	Librarians		Yes
2452	Archivists and curators		Yes
2471	Journalists, newspaper and periodical editors		Yes
2472	Public relations professionals		Yes
2473	Advertising accounts managers and creative directors	Yes	Yes
3121	Architectural and town planning technicians	Yes	Yes
3122	Draughtspersons	Yes	
3411	Artists	Yes	Yes
3412	Authors, writers and translators		Yes
3413	Actors, entertainers and presenters		Yes
3414	Dancers and choreographers		Yes
3415	Musicians		Yes
3416	Arts officers, producers and directors		Yes

3417	Photographers, audio-visual and broadcasting equipment operators		Yes
3421	Graphic designers	Yes	Yes
3422	Product, clothing and related designers	Yes	Yes
3543	Marketing associate professionals		Yes
5113	Gardeners and landscape gardeners	Yes	
5211	Smiths and forge workers	Yes	Yes
5411	Weavers and knitters	Yes	Yes
5414	Tailors and dressmakers	Yes	
5441	Glass and ceramics makers, decorators and finishers	Yes	Yes
5442	Furniture makers and other craft woodworkers	Yes	Yes
5449	Other skilled trades n.e.c.	Yes	Yes

Appendix 2: Data sources

European Commission (2015) InnoBarometer 2015 – The innovation trends at EU enterprises, http://ec.europa.eu/growth/industry/innovation/facts-figures/innobarometer/index_en.htm

Office for National Statistics. Annual Business Survey, 2008–2013: Secure Access [computer file]. 2nd Edition. Colchester, Essex: UK Data Archive [distributor], September 2014. SN: 7451, dx.doi.org/10.5255/UKDA-SN-7451-3

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TBR. Trends Central Resource, 2014. Extracted September 2015

United Nations. UN Commodity Trade Statistics database, 2009–2013. Downloaded August 2015. comtrade.un.org/

WIPO IP Statistics Data Center (2015) Total design applications (direct and via the Hague system) total count by filing office 2013, <http://ipstats.wipo.int/ipstatv2/>
