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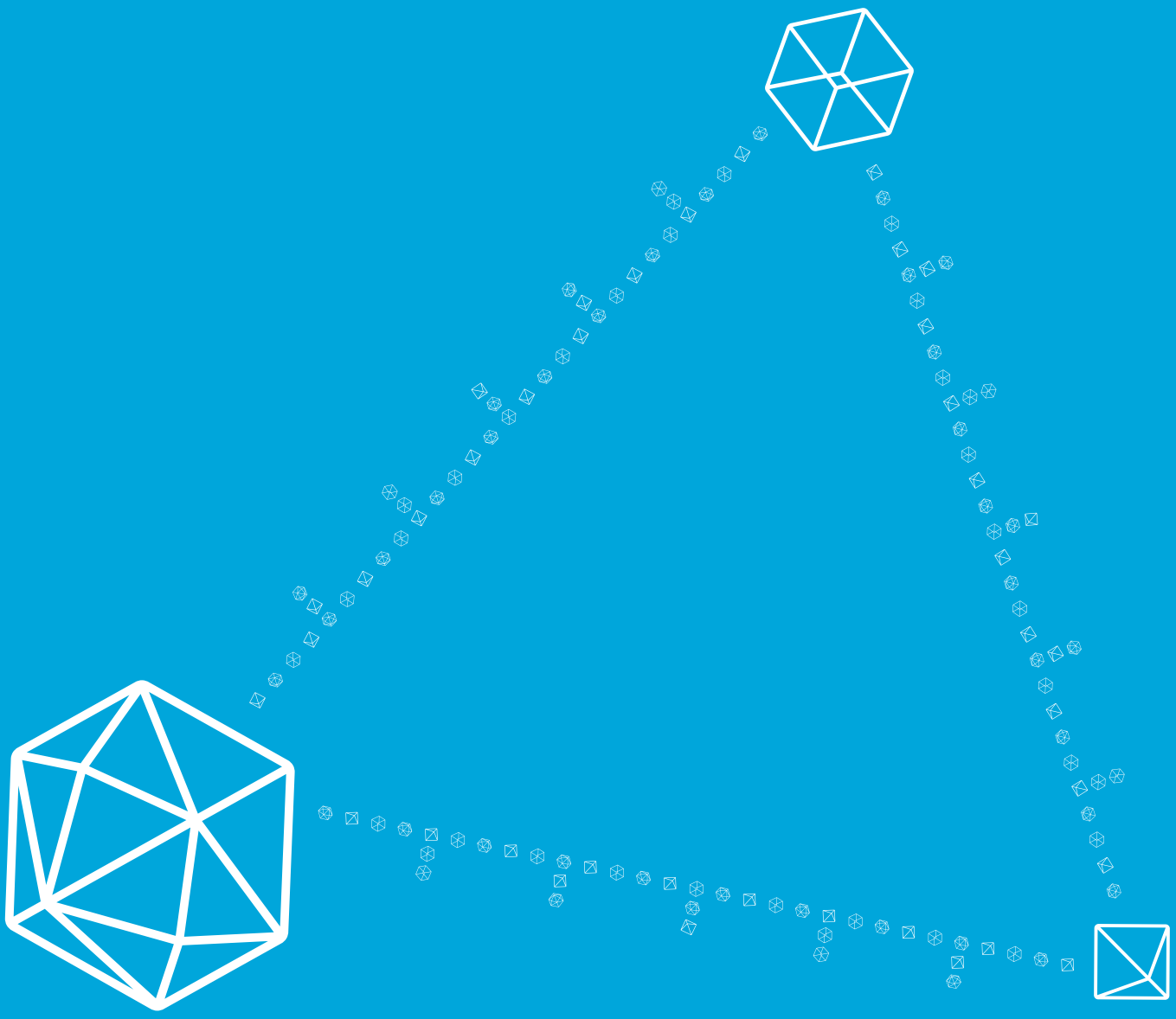
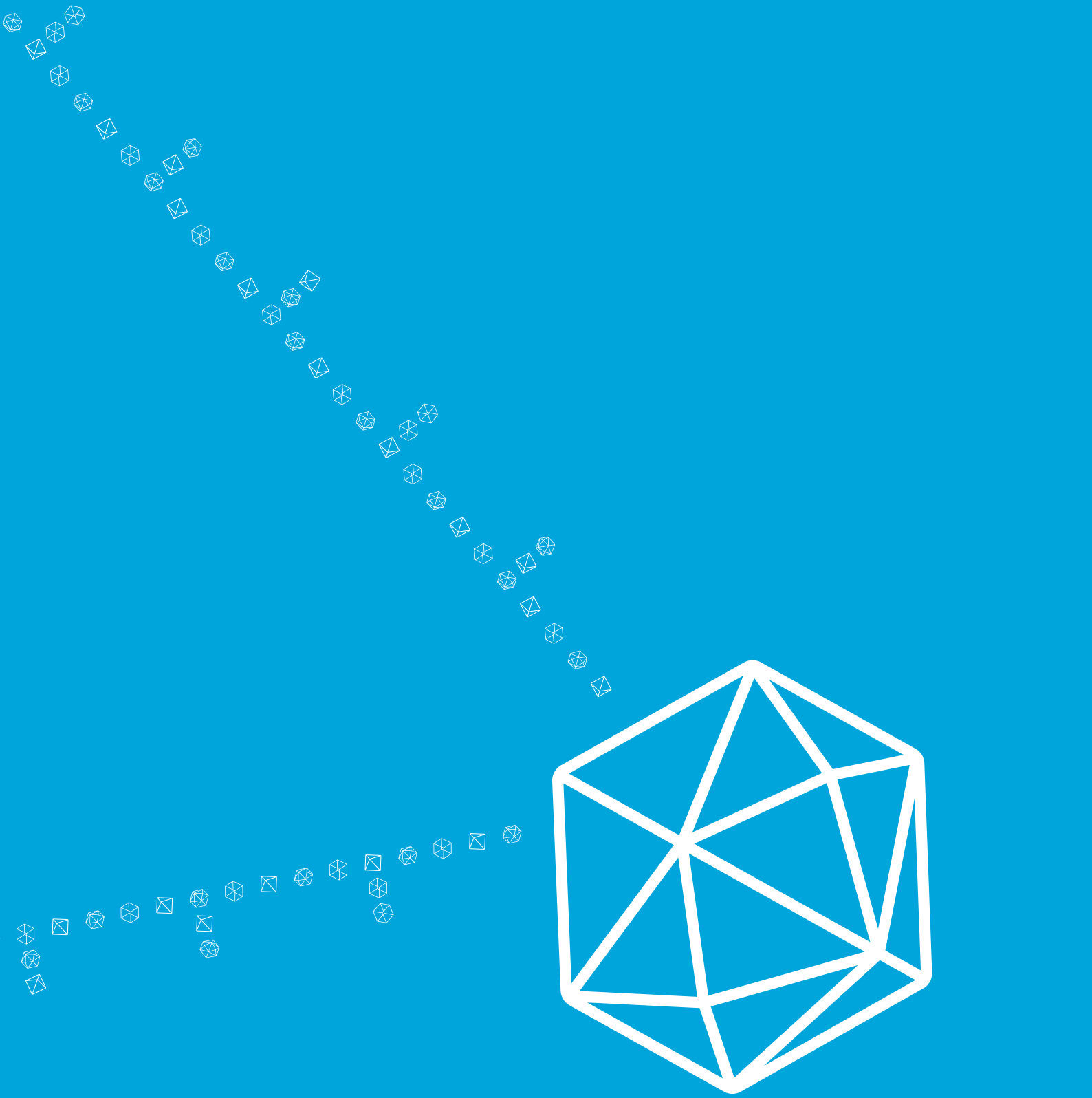
NESTA Making Innovation Flourish

Beyond the creative industries:

Mapping the creative economy in the United Kingdom

Peter Higgs, Stuart Cunningham and Hasan Bakhshi





Executive summary

The creative industries are one of the most important contributors to the UK economy. So it is important that we accurately measure their contribution to economic activity. Doing so can help both policymakers and industry professionals to communicate key concepts, share reliable data and make the case for greater investment.

There have been renewed attempts to estimate the true size of the creative economy. The Department for Culture Media and Sport (DCMS) and the Greater London Authority (GLA) both published studies in 2007. This report complements their work and seeks to improve on the available data about the true extent of creative activity within the economy.

What are the creative industries?

The creative industries have been hampered by multiple definitions and a lack of consistent treatment on what is classified as creative activity. The DCMS defines the creative industries as those "which have their origin in individual creativity, skill and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property". It identifies thirteen different sectors.

The 2001 household census – the most recent census conducted in the UK – allows eleven creative industries to be identified, covering both businesses that create cultural 'products' including the arts, films and interactive games, and those providing business-to-business services in areas such as architecture, advertising, marketing and design, and web and software development. The term embraces radio and TV, news agencies and publishing, as well as jewellery manufacture and museums.

From the 2001 census data, we can identify 26 creative occupation groups. They include: town planners and graphic designers; advertising managers and furniture makers; actors and librarians; journalists and software professionals; architects and archivists. These occupation groups have evolved over the years, as some professions did not feature in the 1981 or 1991 censuses. Those working in creative jobs do not always work in creative industries. The DCMS estimates that in 2006 there were 800,000 creative jobs outside the creative industries adding to the estimated 1.1 million people working in the creative industries.

The Creative Trident

The model of a 'Creative Trident' brings together those working in the creative industries and those working in specialist creative jobs in other firms and organisations. By developing this model, we can analyse the true number of people employed in creative activities and industries and their average incomes.

We focus on three types of employment: 'specialist' artists, professionals or creative individuals working in creative industries; 'support' staff in those industries providing management, secretarial, administrative or accountancy back-up; and creative individuals 'embedded' in other industries not defined as 'creative'. Collectively, they are the 'creative workforce'.

For our model, we have further segmented this workforce into six classifications: advertising and marketing; architecture, visual arts and design; film, TV, radio and photography; music and performing arts; publishing; and software, computer games and electronic publishing. These groups include creative people working in other industries.

How our model is different

CCI originally developed this model in 2005 for Australia. It differs from previous models in three key respects: it uses population data (the number of people employed in each occupation within every industry) to provide more accurate estimates; it employs a conservative approach to the selection of 'creative' occupations and industries, to avoid overreach and enable better comparability between the segments and to the economy as a whole; and it allows us, for the first time, to estimate creative incomes. However, to compensate for difficulties with the frequency and level of aggregation of UK census data, our methodology combines population data with that provided by the Labour Force Survey (LFS).

To ensure that the estimates are as robust as possible – and that we can make valid comparisons – we have focused on those who add most creative value to a process, excluding such activities as the manufacture of TV sets or musical instruments that employ small numbers of creative professionals. By doing so, we find, for example, that in 2001 only 37 per cent of those employed in publishing were in creative occupations; the same applies to 46 per cent of those in advertising or 44 per cent in radio and TV activities.

We have also excluded those occupations which are ostensibly creative but which have very low rates of employment within the creative industries. Using this sort of definition, we exclude 14 groups included in DCMS calculations – including public relations officers, ICT managers and printers – but add five new groups, including draughtspersons, software professionals and librarians.

Why this is a better model

This model offers policymakers five advantages over other models.

- First, it focuses on core creative added value, excluding activities in related chains that are not central to the creative process, such as distribution or retailing.
- Second, it enables us better to map the extent of creative individuals working in other sectors.
- Third, it distinguishes between creative individuals and others who work in creative industries, a useful tool for skills and business development.
- Fourth, it uses census data rather than sample surveys, wherever possible.
- And finally, it enables us to determine the total personal earnings arising from creative employment, a useful indicator of its economic value.

Table 1: The UK Creative Employment Trident for 2001 based on CCI analysis of ONS census data.

UK Employment 2001	Employment within Creative Industries	Employment within non-Creative Industries	Total Employment	Embedded Proportion
Employment in specialist Creative Occupations	552,170	645,067	1,197,237	54%
Employment in Business and Support Occupations	690,641		690,641	
Total Employment	1,242,811	645,067	1,887,878	34%
Specialist Proportion	44%		63%	

Table 2: Long–run growth rates of creative employment in the UK workforce 1981-2006 based on CCI analysis using census and LFS data.

Mode	Census 1981	1991	2001	20-Year Average Growth	LFS 2006	25-Year Average Growth
Specialist	157,020	285,460	552,170	6.5%	699,931	6.2%
Support	288,850	313,440	690,641	4.5%	585,111	2.9%
Creative Industries	445,870	598,900	1,242,811	5.3%	1,285,042	4.3%
Embedded	457,130	524,750	645,067	1.7%	698,244	1.7%
Creative Occupations	614,150	810,210	1,197,237	3.4%	1,398,175	3.3%
Creative Employment	903,000	1,123,650	1,887,878	3.8%	1,983,286	3.2%
UK workforce	22,866,100	23,452,230	26,575,780	0.8%	28,165,612	0.8%
Embedded share of Creative employment	51%	47%	34%		35%	
Creative employment as Share of UK workforce	3.9%	4.8%	7.1%		7.0%	

Our main findings

The creative economy accounts for over 7 per cent of UK employment, consistent with the official estimates: In 2001, creative employment accounted for almost 1.9 million people or 7.1 per cent of UK employment, a very similar level to that determined by the DCMS Economic Estimates for the same period using a different methodology, definition and datasets. Table 1 shows how this is broken down within our Trident categories.

Creative employment has grown strongly over the long run: Census and LFS data together suggest that UK creative employment grew by 3.2 per cent per annum from 1981 to 2006, compared with 0.8 per cent for the broader UK economy (Table 2). The highest growth rates have been among 'specialist' creative workers within the creative industries, which have grown on average since 1981 by 6.2 per cent. However, since 2001 overall growth slowed to 1.0 per cent, just below the UK workforce annual rate of 1.2 per cent for the same period.

When we compare our estimates with those in the DCMS Economic Estimates, our estimates suggest more people working in the creative industries (in 2001, 1.2 million people versus 1.1 million) and lower levels of embedded employment (645,000 versus 787,400). Because we can show where the embedded employment occurs across the broader economy, we feel that the CCI calculations are the more robust.

When we break these data down into our creative segments, we find the largest growth has been, perhaps unsurprisingly, in the software, computer games and electronic publishing segment, which only accounted for 14 per cent of the creative workforce in 1981, but now accounts for 31 per cent, and has grown by an average 6.5 per cent a year between 1981 and 2006 (although growth from 1981-2001 was an even stronger 8.0 per cent per annum).

This segment is closely followed in growth terms by advertising and marketing, up from 5 per cent to 11 per cent of creative employment since 1981, or 6.3 per cent annual growth. Music and the performing arts has maintained a 10 per cent share of employment, with 3.5 per cent annual growth. But architecture, visual arts and design; film, TV, radio and photography; and publishing, while growing by over 1 per cent in employment terms each year, have become less important in creative employment overall.

Table 3: The mean annual income of the creative segments and modes of employment for 2006 based on CCI analysis of LFS data.

Segment	Embedded	Specialist	Support	Creative Occupations	Creative Industries	Creative Employment
Advertising and Marketing	£24,370	£35,900	£23,550	£27,420	£29,590	£26,480
Architecture, Visual Arts and Design	£23,090	£26,000	£30,600	£24,370	£27,110	£25,130
Film, TV, Radio and Photography	£23,100	£30,730	£32,520	£29,480	£31,340	£30,400
Music and Performing Arts	£14,480	£24,940	£21,450	£22,740	£22,440	£21,880
Publishing	£18,490	£25,410	£21,050	£23,020	£23,360	£22,300
Software, Computer Games and Electronic Publishing	£34,810	£39,150	£39,600	£36,730	£39,360	£37,560
All Creative Segments	£26,750	£30,750	£28,800	£28,750	£29,860	£28,770

Note: Mean annual income for UK economy as a whole is £21,060

Creative incomes are higher than average: Creative incomes were on average approximately 37 per cent higher than in the UK economy as a whole in 2006. But they have grown at the slower rate of 2.5 per cent per annum since 2001, compared with 3.5 per cent for the total workforce. Creative occupations generated over £40 billion in salaries and wages in 2006, while support staff in creative industries earned an extra £16.8 billion.

Overall, the creative workforce earned 9.6 per cent of all UK earnings. Their earnings were above average, with those in software, computer games and electronic publishing employment – particularly support workers – earning most. As Table 3 shows, the earnings of embedded music and publishing workers were below the average for the UK as a whole.

More creative people work outside the creative industries than inside them: Compared with other economic activities, creative employment occurs disproportionately outside the creative industries themselves, a finding consistent with other NESTA research. Some 35 per cent of the total creative workforce (a figure that includes support staff in creative industries) is employed in non-creative sectors. This level is similar to the 39 per cent of total UK financial services workforce employed in non-financial services industries in 2001.

Such embedded creative employment is greatest in the 'manufacturing' , 'real estate', 'business activities', 'wholesale and retail trade', and 'financial intermediation' industry groupings. Relative to the size of their overall workforces, outside industry groupings which include creative industries, embedded creative workers appear to be more important in financial intermediation than in any other industry grouping.

This analysis contains many useful insights. We can see how important advertising and marketing jobs are to real estate or research and development activities, for example, or the significance of creative ICT occupations to legal, accounting and business consultancy services. We can also measure employment growth or losses more accurately within each sector, and the extent of embedded creative employment from one year to the next.

Such data also provide an important lesson to policymakers: they should recognise the limitations of using industry-based approaches alone to supporting the creative economy.

Applying the methodology to financial services

The methodology used for creative industries can as readily be applied to financial services,

allowing a comparison between the two sectors.

This is particulary interesting in the light of recent research which has indicated that the creative industries are as large as the financial services sector in the UK. The Financial Trident – including those working in financial professions outside the financial services sector – encompasses two million people, 150,000 more than the Creative Trident. Two thirds of the 1.2 million specialists work outside the core Financial Services industry.

By studying changes within the Trident we can see, for example, the impact of computerisation and ATMs, where clerks, tellers and book-keepers fell from 2.3 million people to 1.2 million people between 1981 and 1991. The role of financial consultants is also apparent when we break down the embedded financial workers by sector: they account for many of the almost 300,000 financial specialists employed in 'real estate, renting and business activities'.

Intriguingly, we find that sectors making use of financial expertise are also more likely to employ creative specialists, perhaps suggesting base level service requirements for efficient working in the 21st century.

Difficulties with UK data

UK data have significant limitations.

- There is no single dataset with the full range of employment and earnings information, unlike US, Canadian, New Zealand and Australian statistics.
- LFS data for smaller occupational and industry groups are less robust than census data.
- There is no census and LFS information on the earnings of the self-employed, in a sector where 28 per cent of people with creative occupations are thus employed.
- UK census data can also be dated as the information is only collected every ten years.
- There are too few industry classifications relevant to the creative industries compared with other countries, and the level of detail is often restricted, even in large occupational groups.
- The LFS is equally restrictive in its level of data, partly due to its comparatively limited sample size: approximately 350,000 individuals in 2006.

These factors lead to greater margins of error than is the case with Creative Tridents calculated in Australia and New Zealand. We need to see better data available in the future within the UK.

Recommendations for improving the data

We have been able to compare the effectiveness of the Creative Trident in both Australia and the UK, and this offers us lessons on how the UK data could be improved. The DCMS and the Office for National Statistics should work together to provide better data and improve the usefulness of their datasets.

- It should be possible to improve information within datasets by increasing the resolution – the extent to which we can drill down the data into smaller subsets – and providing finer classifications in the census 2001 data where more than 50,000 are employed in a single industry.
- The sample size of the Labour Force Survey should be increased to improve its accuracy and to allow for more detail about occupations within industries. A more frequent census of those in work including their income or a much bigger LFS should be conducted at least every five years.
- A stronger metrics culture would benefit from greater access to the source data for all official reports. Source data for the DCMS Economic Estimates and this report should be available for others to build on and challenge. Census and LFS data should be fully downloadable.

Acknowledgements

This report was written by Peter Higgs (Senior Research Fellow, CCI), Professor Stuart Cunningham (Director, CCI) and Hasan Bakhshi (Senior Policy Analyst, NESTA). The Creative Trident methodology used in this paper was developed by CCI. CCI is the Centre of Excellence for Creative Industries and Innovation at the Queensland University of Technology in Australia (www.cci.edu.au).

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Part 1: Purpose and structure of report

1.1 The role of mapping studies

Mapping studies are valuable tools for policymakers and industry professionals alike. They are a vital resource for the communication of key concepts and data. They may also potentially be used to construct an evidence base to inform government investment.

The development of a robust methodology is critical to achieving these aims. Undervaluing a sector most obviously affects its ability to secure supportive policy measures or to attract additional external investment. Overstating the sector's significance by, for example, adopting a loose definition of its activities is potentially no less damaging if it leads to a loss of credibility that turns policymakers off.

Improving the methodology used to construct estimates of the size of the UK's creative economy is a topic of ongoing interest to policymakers, driven in part by the Creative Economy Programme of the DCMS in the UK. In 2007, two major published studies have focused on this area: Frontier Economics' Statistical Analysis of the Creative Industries,[1] which develops a more nuanced definition of the industry than in the current official statistics; and GLA Economics' measurement work for London's creative economy,[2] which examines the characteristics of the capital's creative sector in the broader national context.

1.2 The Creative Trident methodology

This report complements these studies. It applies the Creative Trident methodology (defined in brief in Part 2 and in detail in Part 4) developed by the Australian Research Council Centre of Excellence for Creative Industries and Innovation (CCI) in an attempt to address some of the methodological challenges that have arisen in previous approaches to measurement of creative activities, industries and employment.

1.3 The structure of the report

Since the DCMS introduced the concept of the creative industries in 1998, various measurement frameworks and quantitative techniques have been employed in different countries to assess the extent and importance of creative activities.

The proliferation of studies has led to numerous, often conflicting, definitions of what counts as 'creative' in the economic context. To clarify our parameters, Part Two of this report sets out the definitions, assumptions and terminology we employ in our application of the Creative Trident methodology to UK data.

Part Three provides an overview of existing measurements of the creative industries in the UK and elsewhere, and analyses the strengths and weaknesses of their underlying methodologies. Part Four describes the Creative Trident methodology and compares it with existing approaches.

UK census data are in many ways limited compared with the data collected in such countries as Australia, New Zealand, Canada and the United States. For this reason, our analysis overlays data from the UK Labour Force Survey (LFS) from 2001 to 2006 on the census data available for 1981, 1991 and 2001.

1. Frontier Economics Ltd (2007) 'Creative Industry Performance.' [Online]. Available at: http://headshift.com/dcms/mt/archives/blog_36/1%20-%20Statistical Analysis of the Creative Industries.ppt [Last accessed 21/09/2007].
2. Alan Freeman, GLA Economics (2007) 'Working Paper 22: London's Creative Sector Update.' London: GLA. [Online]. Available at: http://www.london.gov.uk/mayor/economic_unit/docs/wp_22_creative.pdf [Last accessed 5/10/2007].

Part Five reports the results of the UK Creative Trident mapping exercise. It presents the 'Employment Trident', which incorporates: data on specialist, support and embedded creative employment for 1981, 1991 and 2001; growth rates and average levels of earnings for specialist, support and embedded creative workers from 2001 to 2006; and the distribution of embedded creative occupations across non-creative industries for 2001 to 2006. Growth in creative employment and earnings is compared with economy-wide averages for the relevant periods.[3]

Part Six demonstrates the application of the Trident methodology to the financial services sector, and compares the extent to which financial activities and creative activities are embedded in the UK – that is, employment of creative and financial services professionals outside their respective specialist sectors.

This is particularly interesting in the light of recent studies which have indicated that the creative industries are now as large and add as much economic value as the financial services sector.[4] This degree of 'embeddedness', we propose, could be a proxy for the extent to which the creative industries enable economic development, as the financial services sectors are often said to do.

Part Seven concludes by summarising the main findings and implications arising from this study.

3. This report widens our general understanding of where creative activities are performed in the modern economy. To do this and maintain statistical integrity, it is necessary to define what a 'creative occupation' is in a way that is transparent and defensible. This is not meant to imply that other people are not creative as they do their jobs in all walks of life.
4. See Andari, R., Bakhshi, H., Hutton, W., O'Keeffe, Á. and Schneider, P. (2007) 'Staying ahead: the economic performance of the UK's Creative Industries.' London: DCMS. [Online]. Available at: http://www.theworkfoundation.com/Assets/PDFs/Creative_Industries_Foreword_one.pdf [Last accessed 21/08/2007].

Part 2: Terminology and assumptions

This section describes the main terms used in this report and lists the most important assumptions that underpin the Creative Trident analysis.

2.1 Terminology

Creative industries: At a general level, the 'creative industries' is the collective term for those businesses in the economy which focus on creating and exploiting symbolic cultural products (such as the arts, films and interactive games), or on providing business-to-business symbolic or information services in areas such as architecture, advertising and marketing and design, as well as web, multimedia and software development.

In a practical sense the creative industries are defined by a selection of Standard Industrial Classification (SIC) codes that are implemented in national datasets that encompass the specialist businesses that produce creative goods or services. So, for example, the DCMS definition focuses on those activities which have their origin in individual creativity and which have the potential for wealth creation

Table 4: The 11 creative industries selected from the 2001 census data.

SIC	Industry description
744	Advertising
362	Manufacture of jewellery and related articles
742	Architectural and engineering activities and related technical consultancy (This classification is too broad to be of practical value; the relevant data therefore need to be disaggregated from this category)
921	Motion picture and video activities
922	Radio and television activities
920	Recreational, cultural and sporting activities n.o.s. (not otherwise specified)
923	Other entertainment activities
924	News agencies
221	Publishing
925	Library, archives, museums and other cultural activities
72	Computer and related activities (This classification is too broad to be of practical value; the relevant data therefore need to be disaggregated from this category)

through the generation and exploitation of intellectual property.

Table 4 lists the industry descriptions and associated SIC codes for the 11 industries selected for this analysis of the 2001 household census. We will discuss later how these categories align with the 13 sectors that make up the official DCMS measure of the creative industries.

Unfortunately there is no single internationally accepted classification scheme for industry activities, although most recently there has been a degree of convergence into two main families of classification (North American and European).

However, in the context of this study, the Office for National Statistics (ONS) has used different versions and levels of detail in its implementation in the SIC scheme to code industry activity in each of the census years and in the LFS. Appendix 1 lists the various industry classifications considered to be creative industries and that are relevant to our datasets.

Creative occupations: 'Creative occupations' are a selection of occupations which produce creative goods or services, drawn from the various releases of the UK Standard Occupational Classification (SOC) codes. Individuals engaged in creative occupations may participate in any stage of the production process, but it is their involvement primarily in creative functions (rather than, for example, retail sales) that distinguishes them.

Table 5: Creative occupations selected from the 2001 census data.

SOC	Occupation description	SOC	Occupation description
1134	Advertising and public relations managers	3421	Graphic designers
3543	Marketing and associated professionals	3422	Product, clothing and related designers
2432	Town planners	5491	Glass and ceramics makers, decorators and finishers
3121	Architectural technologists and town-planning technicians	5492	Furniture makers, other craft woodworkers
3122	Draughtspersons	5495	Goldsmiths, silversmiths, precious stone workers
3411	Artists	3416	Arts officers, producers and directors
3413	Actors, entertainers	3432	Broadcasting associate professionals
3414	Dancers and choreographers	3434	Photographers and audio-visual equipment operators
3415	Musicians	3431	Journalists, newspaper and periodical editors
2451	Librarians	4135	Library assistants/clerks
2452	Archivists and curators	5421	Originators, compositors and print preparers
3412	Authors, writers	2131	IT strategy and planning professionals
2431	Architects	2132	Software professionals

The 26 four-digit SOC creative occupations selected from the 2001 census data are detailed in Table 5.

The occupation classification scheme used to code occupational data from the earlier census years (1981 and 1991) differs from that used for the 2001 census and the Labour Force Survey (LFS). Appendix 1 contains further information.

Creative Trident: The Creative Trident comprises all the people working in the creative industries (as defined above) and the people working in specialist creative occupations in 'non-creative' firms and organisations.[5]

Trident modes: The three Trident modes are:

Specialist mode: Those people in defined creative occupations employed within the defined creative industries.

Support mode: Those people employed within the defined creative industries who are not working in defined creative occupations but who perform sales, management, secretarial, technical, accounting and administrative functions.

Embedded mode: Those people employed in defined creative occupations but who are working outside the defined creative industries.

Creative Trident methodology: This is a methodology to analyse detailed data of the number of people employed, and where possible their mean income, in every occupation across every industry. The methodology aggregates the number of individuals employed in specialist, support and embedded modes and provides detailed counts according to the level of occupational and industry detail available.

Creative workforce: The creative workforce is the group of people employed in the Creative Trident (i.e. in specialist, support and embedded modes) across all selected creative occupations and creative industries. The size of the creative workforce is determined using the Creative Trident methodology.

Creative segment: A subset of the creative workforce grouped by broad categories of creative output, comprising specialist, support and embedded modes.

The original DCMS Creative Industries Mapping Document, published in 1998, defined 13 sectors, some of which could not be quantified using national data sources. The DCMS subsequently published estimates for these sectors in the broader 11-sector classification

5. If anything, the Creative Trident underestimates the creative workforce, as ideally employment should also include the direct support and supervisory staff of embedded creatives such as those that work on design activities in banks. Unfortunately, there is no way to identify these staff.

Table 6: The correlation between CCI segments and DCMS Economic Estimates sectors.

CCI segment	DCMS Economic Estimates sectors
Advertising and Marketing	Advertising (including marketing)
Architecture, Visual Arts and Design	Architecture
	Art / Antiques trade
	Crafts
	Design
	Designer fashion
Film, TV, Radio and Photography	Film, video & photography
	Television & radio
Music and Performing Arts	Music and the visual and performing arts
Publishing	Publishing
Software, Computer Games & Electronic Publishing	Software, computer games, and electronic publishing

It is important to note that, because the Creative Trident accounts both for activities within the creative industries and embedded creative occupations in non-creative industries, our definition of 'creative segment' includes both the subset of creative industries related to each segment above and the subset of creative occupations producing similar types of creative output, even where they are found in non-creative industries (i.e. as embedded employment).

For example 'publishing' is about more than the 'publishing industry' (SIC 221) alone. The creative segment 'Publishing' also refers to specialist and support employment within 'Library, archives, museums and other cultural activities' (SIC 925) as well as embedded employment (i.e. in non-creative industries) of the following creative occupations:

- 2451 Librarians
- 2452 Archivists and curators
- 3412 Authors, writers
- 3431 Journalists, newspaper and periodical editors
- 4135 Library assistants/clerks
- 5421 Originators, compositors and print preparers

2.2 Assumptions

The principal data assumptions underlying the analysis described in this report are as follows:

- That **the average income of those who are self-employed within each occupation-industry combination is the same as those working as employees**. If the mean income of the self-employed is understated or overstated by 50 per cent, say, from the true mean then this would result in an under- or overstatement of annual creative earnings in our estimates by up to 14 per cent.
- That **LFS scaling is accurate**: LFS is a 1-in-400 sample, and results reported here have been scaled up by the Office for National Statistics (ONS) to produce population estimates. We provide no independent check on the accuracy of the ONS's scaling-up process. (See Appendix 2 for a comparison of LFS and census employment).
- That **census scaling for 1981 and 1991 is appropriate**: the ONS collected employment-related data for the censuses held in these years on only a 10 per cent sample of the overall census population. We have to assume that the ONS's methodology ensures that this 10 per cent is representative, so that we can scale up results for these years by a factor of 10 to produce a population estimate.
- That **UK creative incomes are meaningfully represented by mean weekly incomes** when determined for each occupation employed within each industry at the finest level of classification available.
- That **by excluding creative employment as a 'second job', we have not introduced an appreciable bias into our estimates** within the LFS dataset. Comparisons of creative employment to the total workforce can only be made on the basis of employees' 'main job'. See Appendix 3 for an analysis of the impact of excluding second jobs.

6. Department of Culture, Media and Sport (1998) 'Creative Industries Mapping Document 1998.' London: DCMS. [Online]. Available at: http://www.culture.gov.uk/Reference_library/Publications/archive_1998/Creative_Industries_Mapping_Document_1998.htm [Last accessed 27/08/2007].
7. Centre for Cultural Policy Research, University of Hong Kong (2003) 'Baseline Study on Hong Kong's Creative Industries for the Central Policy Unit of Hong Kong SAR, Hong Kong.' Hong Kong: Centre for Cultural Policy Research, University of Hong Kong. [Online]. Available at: http://www.info.gov.hk/cpu/english/papers/baselinestudy(eng).pdf [Last accessed 27/08/2007].
8. French Ministry of Culture (2005) 'L'emploi culturel dans l'Union européenne en 2002: Données de cadrage et indicateurs.' Paris: French Ministry of Culture. [Online]. Available at: http://www2.culture.gouv.fr/deps/fr/emploicult05.pdf [Last accessed 21/08/2007].
9. Higgs, Peter L. and Cunningham, Stuart D. (2007a) 'Australia's Creative Economy: Mapping Methodologies. Technical Report.' Brisbane: CCI. A more detailed discussion of the historical development of measurement of the cultural and creative industries is provided in Higgs and Cunningham (2008) Creative Industries Mapping: Where have we come from and where are we going? 'Creative Industries Journal.' Vol 1, no.1, forthcoming 2008.
10. As summarised in Frontier Economics Ltd (2007) 'The Creative Economy Programme: A Summary of Projects Commissioned in 2006.' London: DCMS Evidence and Analysis Unit. [Online]. http://headshift.com/dcms/mt/archives/blog_36/Evidence%20Summary.doc [Last accessed 21/08/2007].
11. Walton, M. and Duncan, I. (2002) 'Creative Industries in New Zealand Economic contribution.' Wellington: Industry New Zealand. [Online]. Available at: http://www.nzte.govt.nz/common/files/nzier-mapping-ci.doc [Last accessed 21/08/2007].
12. Department of Communications, Information Technology and the Arts (2002) 'CICS Creative Industries Cluster Study Stage One.' Canberra: DCITA. [Online]. Available at: http://www.cultureandrecreation.gov.au/cics/ [Last accessed 27/08/2007].

Part 3: Existing analyses of creative activities

The first Creative Industries Mapping Document by the DCMS[6] became the template for numerous other studies commissioned by governments at the national, regional and city level. The DCMS study built on many earlier attempts to study the size and impact of the cultural industries, and established the approach of measuring employment and business activities within selected industrial classifications, using data from household surveys of the industry in which individuals work, or from surveys of businesses within specific industries.

Other mapping studies, such as by the Hong Kong Creative Industries Baseline Study,[7] refined the early DCMS template to develop a more comprehensive approach including examination of specific creative occupations.

Subsequent analyses have further attempted to measure employment in the creative or cultural workforce, as exemplified by the French Culture Ministry's Department for Planning and Statistics 2005 report,[8] work conducted for Australia by the CCI authors,[9] and research conducted for the UK by Frontier Economics as part of the 2007 Creative Economy Programme.[10]

The development of a robust measurement methodology is critical to achieving the primary function of mapping studies. This section of the report summarises the various approaches used to map the creative industries and creative economy activities in the UK and in other jurisdictions, and highlights the strengths and weaknesses of each.

3.1 Industry-based studies

3.1.1 The 1998 and 2001 DCMS Mapping Documents

The 1998 UK Creative Industries Mapping Document, produced by the DCMS, identified 13 creative industries for analysis: Advertising; Architecture; Art & Antiques Market; Crafts; Design; Designer Fashion; Film & Video; Interactive Leisure Software; Music; Performing Arts; Publishing; Software & Computer Services; and Television & Radio. It proposed that the creative industries "are those industries which have their origin in individual creativity, skill and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property".

Measures of economic activity analysed in the Mapping Document included: levels of employment; characteristics of the firms in the identified creative industries (including their number, their size, turnover and profit margins); and outputs, including the value of exports and estimates of Gross Value Added.

A template for analysing the creative industries was formalised in the subsequent 2001 UK Creative Industries Mapping Document, and this structure was applied in New Zealand in 2002 (Creative Industries in New Zealand: Economic contribution[11]), in Australia the same year (Creative Industry Cluster Study Series[12]) and Singapore (Economic Contributions of Singapore's Creative Industries[13]) in 2003. It was applied at a regional level, in Queensland, Australia (Creativity is Big Business[14]) in 2004.

3.1.2 Limitations in DCMS Mapping Documents

The DCMS template-based studies were significant in establishing the first comprehensive benchmarks for the creative industries. However, there were three key methodological limitations:

1. Conceptual limitations
2. Classification and granularity limitations
3. Data source limitations

These limitations made it difficult to compare the performance of creative industries over time, or to measure comparative performance between industries and regions.

Conceptual limitations of the DCMS template arose primarily from ongoing technological progress and changing market and industry boundaries. In particular, the progressive convergence of the information technology, communications, cultural and content industries created substantial difficulties for those trying to measure and understand economic and industrial activity.

Old occupations and sectors had emerged, especially in the digital industries, and these were not reflected in the standardised classification schemes used by statistics organisations. This lack of alignment was exacerbated by the usual 10-15 year gap between the updates to industry and occupation classifications.

A segment-based approach requires that segment-specific estimates of economic activity can be summed to provide an estimated total for the creative industries as a whole. A risk of double-counting is incurred where the results of independent, ad-hoc surveys are combined without making adjustment for any overlap in respondents or domains of interest. Unfortunately the degree of any such overlap is difficult, and sometimes impossible, to determine, as the identified survey responses for each segment are not available for reconciliation.

3.1.3 The DCMS Evidence Toolkit

The 2002 UK DCMS Regional Cultural Data Framework[15] was a substantial effort to address the need for consistency by identifying industry activities and occupations along a value chain in each creative segment. Five years after its introduction, it remains the most rigorous tool for creative economy performance tracking yet devised.

The generic value chain established by the Framework identifies the following stages:

1. Creation
2. Making
3. Dissemination
4. Exhibition/Reception
5. Archiving/Preservation
6. Education/Understanding

However, this generic value chain does not differentiate the distinctively 'creative' activities involved in the production and distribution of creative goods and services. Specifically:

> Making: under the Framework, this stage includes many manufacturing activities such as 'manufacture of relevant capital goods', which includes the manufacture of musical instruments, computers, television sets and radio transmitters. While these are important economic activities, they do not in themselves constitute content creation, nor do they require specifically creative skills.
>
> Dissemination and Exhibition/Reception: under the Framework, activities conducted by entities such as cinemas and newsagents are included. However, these are dominated by the distribution of creative outputs generated in other countries. For example, in the UK film market, UK-originated content accounts (including US co-productions) for only around 20 per cent of all cinema box office receipts and 17 per cent of all DVD and VHS rental transactions.[16] Similarly, newsagents typically gain little revenue from the sale of newspapers, and their magazine and book trade could well be dominated by non-UK titles.

While accounting for these types of activities may be appropriate when developing 'access to markets' strategies or conducting input/output and economic multiplier studies, we suggest that they are not directly relevant when calculating the level of creative employment.

3.1.4 Capturing creativity

Defining what does count as 'creative' however is a challenging task. The segment definitions developed in the 1998 DCMS template are based on the common types of creative output within industries; studies using the template

13. Ministry of Information, Communications and the Arts (2003) 'Economic Contributions of Singapore's Creative Industries.' Singapore: Ministry of Information, Communications and the Arts. [Online]. Available at: http://www.mica.gov.sg/MTI%20Creative%20Industries.pdf [Last accessed 12/01/2008].
14. ICF Consulting, SGS Economics and Planning (2003) 'Creativity is Big Business - A framework for the future (QCIS).' Brisbane: Queensland Department of State Development, Trade and Innovation. [Online]. Available at: http://www.sd.qld.gov.au/dsdweb/v3/guis/templates/content/gui_cue_cntnhtml.cfm?id=34220 [Last accessed 27/08/2007].
15. Now known as the DCMS Evidence Toolkit. See 'DCMS Evidence Toolkit: Technical report.' London: DCMS. [Online]. Available at: http://www.culture.gov.uk/Reference_library/Publications/archive_2004/det_techincalreport.htm [Last accessed 21/08/2007].
16. See UK Film Council YearBook 2006. Available at: http://www.ukfilmcouncil.org/10084?show=10305&page=3&step=10 [Last accessed 20/9/2007].

therefore analysed data about the specialist firms operating within each specific segment.

However, as Pratt (2004)[17] notes, standard industrial classification schemes are not good at describing creative activities, which are generated in three ways: first, by individuals (as sole traders or producers); second, by groups working within specialist (often consulting) creative organisations; and third, by individuals in creative occupations working in non-creative organisations.[18]

The substantial and frequent movement between these modes of activity exacerbates the limitations of standard industry classifications. For example, individuals may move from being an independent film producer to working for government film agencies, or a designer might sign a three-year contract to work for a bank or advertising agency.

A result of this movement and diversity is that the economic significance of creative activities may be underestimated if one relies on an industry-centric approach. Measuring the employment significance of, for example, the software segment, would involve counting the people employed within firms in the specialist computing software industries under the most appropriate classification (in this case, '72.2 Software consultancy & supply'). Australian evidence[19] suggests that this approach has led to substantial under-counting in that country by approximately 50 per cent, reflecting both poor statistical industry definition coverage and the fact that so many software designers are 'embedded' in other industries.

Another practical classification issue is that many creative activities are 'lost' within broad industry categories where they cannot be included without significant risk of overreach. For example, in the UK, specialist design consulting activities are buried within broad industry classifications such as '748 Miscellaneous business activities not elsewhere classified' or '222 Printing and service activities related to printing' and even in several classifications related to clothing manufacturing.

This lack of alignment arises when industry data are not classified with sufficient detail to enable specific measurement of creative activities. Where the relevant creative activities are subsumed into other industries, estimates are often based on a proportion of the larger industry. The DCMS's Economic Estimates (DEE) series, for example, attributes 5 per cent of a range of clothing manufacturing activities to "Designer fashion". Such factors are subject to adjustment in the light of better knowledge or changes in the workforce, and result in the need for revisions of earlier estimates.

In other cases, such as the UK 'Design' sector (which comprises Graphic Design and Industrial or Product Design), there are currently no UK SIC codes used to categorise national survey data and they are consequently silent on the subject.[20]

The coding of 'industry of employment' responses in the 2001 UK census resulted in only 11 classifications being useful at the three-digit SIC level and one ('Computer and related activities') at the two-digit SIC level, compared with 34 in Australia.[21] The accuracy of estimates of creative industries employment in the UK would be substantially improved if the data were compiled at the four-digit resolution available in other countries. These data limitations have meant that the DCMS's industry-led estimates of employment have not made use of UK census data, with the result that the DEE are calculated solely on sample-based surveys – primarily the Labour Force Survey – and where necessary industry-specific business surveys.

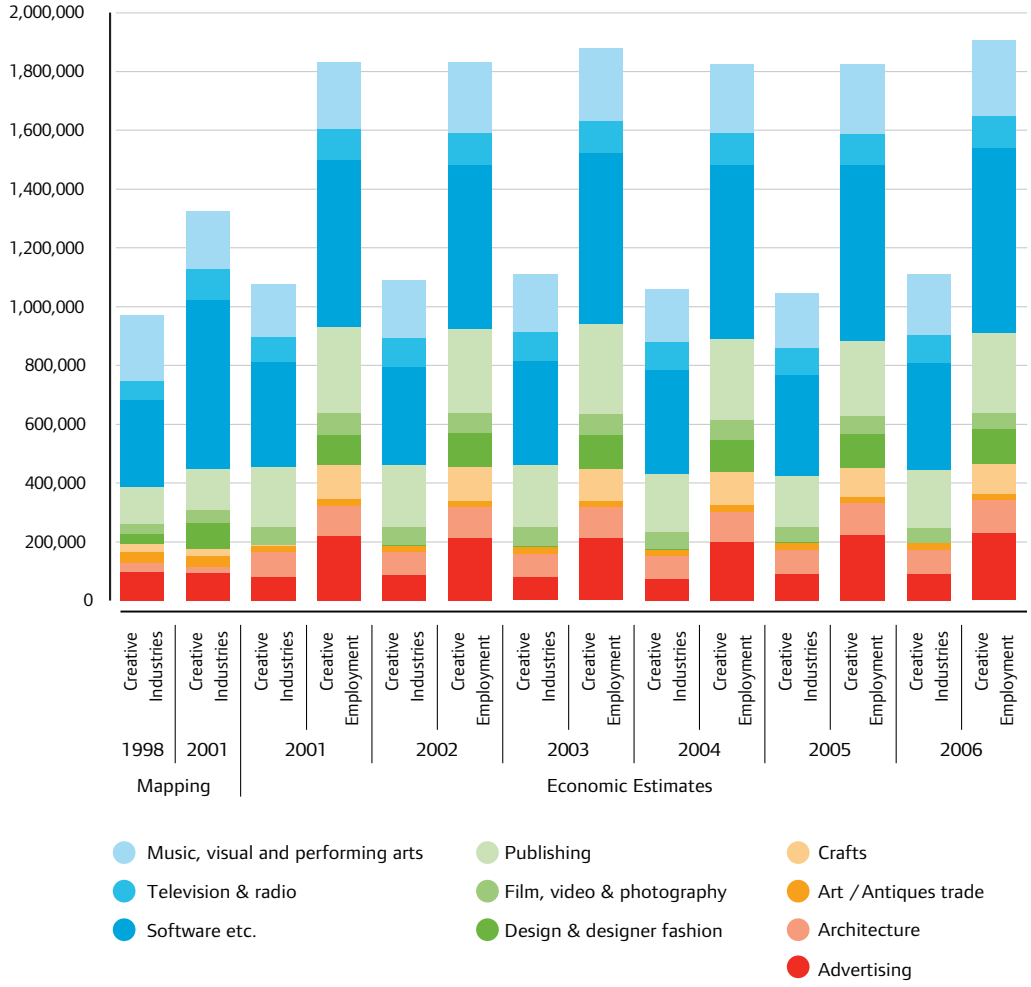
3.2 Capturing industry *and* occupation

From 2003, a number of new creative industry mapping documents[22] looked beyond industry analysis, and began to explore occupational analysis, counting the number of people employed in specialist occupations and the patterns of employment across creative sectors.

The DCMS[23] estimates that creative jobs outside the creative industries add approximately 800,000 people to the estimated 1.1 million working in the creative industries. Figure 1 plots estimates of the UK's total creative employment and, within that, employment in each of the DCMS-defined creative sectors.

17. Pratt, A. (2004) The cultural economy: A call for spatialized 'production of culture' perspectives. 'International Journal Of Cultural Studies.' Volume 7(1): pp.117-128. London: Sage Publications. [Online]. Available at: http://ics.sagepub.com/cgi/reprint/7/1/117 [Last accessed 21/08/2007].
18. The suitability of counting the level of employment of the converse of this – people working in specialist businesses in the creative industries, but in non-creative jobs – is seldom discussed. This is discussed more fully in the next section.
19. Higgs, P., Cunningham, S. and Pagan, J. (2007) 'Australia's Creative Economy: Basic Evidence on Size, Growth, Income and Employment. Technical Report.' Brisbane: CCI. [Online]. Available at: http://eprints.qut.edu.au/archive/00008241/ [Last access 29/9/2007].
20. This situation should be rectified when the SIC2007 is implemented in 2008 surveys.
21. The Australian classifications are discussed in more detail in Appendix 5.
22. Including the Hong Kong Baseline Study (Baseline Study of Hong Kong's Creative Industries 2003) and Gertler, M. and Vinodrai, T. (2004) 'Designing The Economy A Profile Of Ontario's Design Workforce.' Toronto: The Design Industry Advisory Committee. [Online]. Available at: http://www.utoronto.ca/progris/pdf_files/DesigningTheEconomy.pdf [Last accessed 27/08/2007].
23. DCMS (2003-) 'Creative Industries Economic Estimates Statistical Bulletin.' London: DCMS. [Online]. Available at: http://www.culture.gov.uk/Reference_library/rands/statistics/creative_industries_eco_est.htm [Last accessed 21/08/2007].

Figure 1: DCMS estimates for 1998 to 2006 of sectoral employment within the creative industries and total creative employment.



Source: DCMS Economic Estimates

The occupational data were extracted from the annual Labour Force Survey – a panel-based survey of 350,000 individuals in the UK which is then scaled up.

3.2.1 Methodological constraints of the approach

The methodology of combining occupation and industry data was further developed in the Hong Kong Baseline Study and the Ontario Design Study, especially in the refinement of methods for establishing patterns of embedded employment.

While the inclusion of creative occupations has been an important step forward for creative industries mapping studies, methodological and data limitations have continued to limit the accuracy of these approaches. The diversity of creative activities makes it important for analysis to be conducted at the finest possible resolution of classification.[24]

The DCMS Economic Estimates are constrained by either having to use lower-resolution classifications which lead to greater margin of error, or to use tables with data selected at higher resolution classifications but only supplied by the statistical authorities within aggregated industry totals. The preferred choice, obtaining detailed occupations along one axis and detailed industries along the other, is not feasible as it results in the suppression of a significant proportion of the LFS source data in individual cells of the table.[25]

The impact of this for the DCMS is that it cannot perform analysis at a fine level in more than one dimension (viz. occupation within industry) at any reasonable level of detail, as doing so would generate substantial statistical errors. DCMS's approach has been to obtain summary cross-tabulations of the level of employment in each of the selected creative

24. We use the term 'resolution' to refer to the degree of classification for which data are available. In a classification hierarchy, the finest resolution is the one with the most digits. The lowest resolution is the top-level, single-digit classification, which in the case of industry activity is the 'Division' and in occupation is the 'Skill Level' or 'Major Group'. The finest resolution normally occurs at the six-digit occupation or four- or five-digit industry level. But all 'finest resolutions' are not created equal: a six-digit industry classification scheme with 350 unique entries is not as fine as a four-digit one using all 999 possible classifications. 'Resolution' is a proxy for the ability to finely discriminate activities.

25. The policy of the Office for National Statistics has been to not release record (or cell) data which have a count of less than 2,000 because of the higher statistical unreliability of low count cell – a result of the relatively low sampling base of the LFS. By way of comparison, the US Bureau of Labor Statistics' Occupational Employment Statistics (OES) are based on data from approximately 1.2 million respondents, though the self-employed are not included. The full 'industry by occupation, employment and income' dataset, which contains over 45,000 records, can be downloaded from the Bureau's website at http://www.bls.gov/oes/

occupations that occurs outside the defined creative industries.

This limitation has several consequences:

1. Estimates of the embedded creative workforce are calculated as a residual of total occupations and industry employment, and so depend on what creative industries are selected.

2. It is not possible to analyse the distribution of creative employment in businesses outside the creative industries. So, for example, the published summary tables do not allow researchers to determine either the significance of the top ten occupations within a selected industry, or the top ten industries in which a selected occupation is employed.[26]

3.2.2 Classification selection and embedded employment

Care also needs to be taken in selecting which industry and occupation classifications to analyse, as the chosen candidates should vary, depending on the purpose and context of the classification. The industry and occupation classifications used to calculate employment for the DEE appear to have been selected without considering how these categories interact in multi-dimensional, whole-workforce datasets.

Three factors need to be considered when analysing combined industries and occupations datasets to determine the level of embedded employment:

Correlations between occupations and industries

The DCMS Economic Estimates 2006 report includes four occupations in the Publishing segment which certainly have a place within the publishing industries, but could not be considered as creative occupations when embedded within the broader economy. These include 'Originators', 'Compositors and Print Preparers', 'Printers, Bookbinders and Print Finishers' and 'Screen Printers'. Of the 35 occupation codes used by the DCMS to calculate embedded creative employment, ten are arguably largely or wholly irrelevant, and substantially inflate estimates of the 'embedded' creative workforce.

Furthermore, of the 25 industry classifications used by the DCMS in the calculation of industry employment, export and business numbers, six are likely to have a very low degree of correlation with core creative activities. These include 'Clothing Manufacture', 'Other Business Activities Not Elsewhere Classified', 'Other Retail Sale in Specialised Stores', and 'Retail Sale of Second-hand Goods in Stores'. Although proportional adjustments are made to some of these industry data to reflect the fact that the industries are not wholly creative in nature, such scaling adjustments create other problems (see 'Maintaining the integrity' below).

Scaling obscures the details

The application of adjustments to broader categories of activity hampers the ability to reveal outliers in the employment data or changes in circumstances. In addition, the current scaling factors have remained fixed since the analysis was first conducted in the 2001 DCMS Mapping Study. Given the rate of change and convergence in the creative industries in recent years, it is unlikely that these proportions can have remained relevant without some further adjustment (as recognised by the DCMS).[27]

Maintaining the integrity of a whole-of-workforce dataset

The calculation of embedded employment cannot be simply grafted onto a methodology intended to determine the extent of employment across every activity relevant to the creative industries.

The 2001 census shows the total employed population in the UK as 26,575,775 people, analysed on the basis of either occupations or industries. The LFS 2006 dataset shows 28,165,612 people employed (on the basis of main job) on either axis. Applying a scaling factor to one axis, such as the industry classification axis, is not straightforward as doing so invalidates the integrity of the two axes' totals.

If the intention of an employment analysis is to show the size and characteristics of a segment in the context of the whole of the workforce, then irrespective of whether the research is using detailed (as in the census) or summarised (as in LFS sub-totalled) two-dimensional tables, a proportion of an industry cannot be used without creating an imbalance in the axes' totals. In this respect, working with an 'occupation within industry' employment table is rather like double-entry accounting – it is more onerous to establish and maintain, but the reward is much greater flexibility in reporting and the improved security of built-in integrity checks.

26. See Appendix 6 and 7 for an example of this type of analysis of classifications using data from the 2001 census.
27. Frontier Economics Ltd (2007) 'The Creative Economy Programme: A Summary of Projects Commissioned in 2006.' London: DCMS Evidence and Analysis Unit. [Online]. Available at: http://headshift.com/dcms/mt/archives/blog_36/Evidence%20Summary.doc [Last accessed 21/08/2007].

Part 4: The Creative Trident methodology

The CCI Creative Trident methodology was developed to address the methodological challenges described above and so provide a more robust foundation for meeting the requirements of mapping studies.[28]

CCI has developed a methodology and suite of tools which enable analysis of a range of national datasets (such as census-based employment and business activity) from different periods and sources, despite variations in industry/occupation/qualification classifications, often with different underlying hierarchical strategies and varying levels of detail aggregation.

Our previous research has shown that the significance of creative activities – their level of employment and earned income – can be determined using a methodology centred on a census-based matrix combining employment within the creative industries and creative employment within other sectors of the economy. Our methodology attempts to combine these data in a way that neither inappropriately includes nor excludes people because of shortcomings in classification schemes.

The Trident definition of creative activity therefore recognises three distinct employment situations, or 'modes':

- Workers within a creative profession (determined by occupations) within a creative sector (determined by industries) 'specialist' mode.
- Workers in a non-creative profession within a creative sector 'support' mode.
- Workers in a creative occupation outside the creative industries 'embedded' mode.

These three employment modes together comprise the Creative Trident. The Trident can be analysed from three perspectives: employment (distinguishing between specialist, support and embedded workers); income (deriving the total annual incomes generated by specialist, support and embedded workers activities); and whole-economy (disaggregating the extent of embedded employment across each non-creative sector of the economy).

4.1 Defining the creative core

The Creative Trident methodology can be applied using any well-articulated definition of activities (for example, creative, cultural or financial services). However, it works best conceptually when there is a concentration on what we call the 'pre-creation and creation' stages of the value chain, which we refer to collectively as the 'creative core'. Concentrating on these stages means that we capture the essential starting points for creative activity, whether in the creative industries themselves (the specialist mode) or in the wider economy (the embedded mode).

While this is a different approach from that of the DCMS Economic Estimates, it employs a selection strategy very similar to Layer One of the five-layer generic supply chain concept proposed by Frontier Economics in its recently published work for DCMS.[29] Frontier suggests that the level of creativity declines from Layer One to Layer Five, and that Layer One is the most appropriate to use for most benchmarking purposes.

28. For further information on the Creative Trident Methodology, see Higgs, Peter L. and Cunningham, Stuart D. (2007a) 'Australia's Creative Economy: Mapping Methodologies. Technical Report.' Brisbane: CCI.
29. Frontier Economics Ltd (2007) 'The Creative Economy Programme: A Summary of Projects Commissioned in 2006.' London: DCMS Evidence and Analysis Unit. [Online]. Available at: http://headshift.com/dcms/mt/archives/blog_36/Evidence%20Summary.doc [Last accessed 21/08/2007].

Our definition of the creative core[30] selects the activities, in either occupation or industry classifications, which occur at the pre-creation stage (including preservation, access, collecting and licensing activities),[31] and the creation stage of the value chain. In the creation stage, we follow David Throsby's notion of 'creative workers', defined as:[32]

- those engaged in producing primary creative output – for example, writers, musicians, visual artists, film, television and video makers, sculptors and craftspeople;

- those engaged in interpretive activity – for example, performers interpreting works of drama, dance, music etc. in a wide variety of media from live performance to digital transmission via the Internet; and

- those supplying creative services in support of artistic and cultural production – for example, book editors, lighting designers, music producers, etc.

While Throsby's definition is essentially occupation-focused, deriving as it does from cultural employment, it may also be applied to industry-defined activities and services.

We have excluded a number of DEE industry activity selections: some in which the DCMS counts all employment (such as printing, film distribution, cinemas, and the provision of specialist education services), and some in which they apply proportional calculations (such as the production of those capital goods e.g. TV sets and musical instruments which may be needed for creation, performance or usage).

By excluding these, we create a basis for more reliable comparisons of employment (including self-employment) between the six segments at both the pre-creation and creation stages. As with Frontier's Layer One focus, our strategy has been to focus on the creative and production-related activities which demonstrate the highest degree of creative value-added. These are also the stages where there is greater availability of classifications to measure their activities.

Applying the Creative Trident methodology requires the selection of whole occupation and industry classifications since proportions cannot be used in 'occupation within industries' datasets. Equally, apart from a few very broad, poorly defined classifications, the selection process is based on the actual patterns of employment observed in the data:

- Creative occupations typically have at least 25 per cent of their employment in creative industries.

- Creative industries typically have at least 25 per cent of employment in creative occupations.

Difficulties in the selection of classifications – or more often in their grouping into segments – become apparent when the first analysis is performed, as one segment could have little or no employment in one mode – very often in support mode. So since only 11 industry classifications are being used, it is difficult to group them into more than six segments.

If we bear in mind that we are selecting in two dimensions, not one, then the industries which meet these criteria at the most detailed level are as shown in Table 7, and the qualifying occupations are as shown in Table 8.

30. Note that our definition of the creative core also corresponds closely with that employed by Andari, R., Bakhshi, H., Hutton, W., O'Keeffe, Á. and Schneider, P. (2007) 'Staying ahead: the economic performance of the UK's Creative Industries.' London: DCMS. [Online]. Available at: http://www.theworkfoundation.com/Assets/PDFs/Creative_Industries_Foreword_one.pdf [Last accessed 21/08/2007].
31. CCI's concept of a creative value chain recognises the growing role of re-use and re-purposing of creative output as well as the traditional role of collecting institutions being a stimulus and resource for new literary, artistic and other creations. Similarly film libraries, licensing firms and collecting societies facilitate the input into new cycles of creative outputs.
32. Throsby, D. (2001) 'Economics and Culture.' Cambridge: Cambridge University Press.

Table 7: Classifications used to determine the creative core industries using census and LFS data and the percentage of employment that is within creative occupations.

Source	SIC	Industry description	% of employment within creative occupations
Census	221	Publishing	36%
LFS	2211	Publishing of books	42%
	2212	Publishing of newspapers	46%
	2213	Publishing of journals and periodicals	51%
	2214	Publishing of sound recordings	40%
	2215	Other publishing	37%
Census	362	Manufacture of jewellery and related articles	28%
LFS	3622	Manufacture of jewellery and related articles not elsewhere classified	56%
Census	72	Computer activities (but subject to disaggregation into 7220 and 7260)	37%
LFS	7220	Computer software consultancy	48%
Census	742	Architectural and engineering activities and related technical consultancy (but disaggregated into 74201 and 74209)	34%
LFS	74201	Architectural and engineering activities and related technical consultancy (but disaggregated into 7421 and 'all other industries subtotal')	48%
Census	744	Advertising	46%
LFS	7440	Advertising	46%
	7481	Photographic activities	73%
Census	920	Recreational, cultural and sporting activities n.o.s.	10%
	921	Motion picture and video activities	31%
LFS	9211	Motion picture and video production	60%
Census	922	Radio and television activities	47%
LFS	9220	Radio and television activities	60%
Census	923	Other entertainment activities	47%
LFS	9231	Artistic and literary creation and interpretation	81%
	9232	Operation of arts facilities	35%
	9234	Other entertainment activities not elsewhere classified	39%
Census	924	News agency activities	61%
LFS	9240	News agency activities	57%
Census	925	Library, archives, museums and other cultural activities	37%
LFS	9251	Library and archive activities	73%
	9252	Museum activities and preservation of historical sites and buildings	17%
Average of all creative industries			44%

Source: Analysis by CCI of custom tables of the Office for National Statistics 2001 Census of Households and 2006 LFS

Under our criteria, we have included three industries excluded by the DEE:

1. 9251 Library and archive activities
2. 9252 Museum activities and preservation of historical sites and buildings
3. 3622 Manufacture of jewellery and related articles not elsewhere classified

Conversely, six of the industries included in the DEE are excluded from our analysis:

1. 2231 Reproduction of sound recording
2. 2232 Reproduction of video recording
3. 2233 Reproduction of computer media
4. 9212 Motion picture, video distribution
5. 9213 Motion picture projection
6. 9272 Other recreational activities

These industries have been excluded because they relate primarily to the distribution and exhibition of creative outputs, thus falling outside our pre-creation and creation criteria for inclusion in the creative core.

Additionally, automatically excluded from our selection are any of the classifications from which the DCMS only uses proportions of employment: the nine clothing manufacture and two art and antiques retail industries.[33]

For occupation of employment, our selection comprises the 26 SOC codes listed in Table 8.

33. As detailed in Annex A of DCMS Economic Estimates Statistical Bulletin October 2007.
34. Variations could occur between the LFS and census proportions either because of the different levels of detail of the industry classifications of the two datasets, i.e. four-digit in LFS and two- or three-digits in census.

Table 8: Creative core occupations used in census and LFS datasets and the percentage of employment occurring within creative industries in 2001.[34]

SOC	Occupation Description	% of employment within creative industries 2001	
		Census	LFS
1134	Advertising and public relations managers	67%	47%
2131	IT strategy and planning professionals	58%	53%
2132	Software professionals	38%	39%
2431	Architects	78%	78%
2432	Town Planners	59%	29%
2451	Librarians	38%	41%
2452	Archivists and curators	54%	68%
3121	Architectural technologists and Town Planning technicians	78%	69%
3122	Draughtspersons	29%	22%
3411	Artists	45%	87%
3412	Authors, writers	44%	65%
3413	Actors, entertainers	69%	79%
3414	Dancers and choreographers	35%	85%
3415	Musicians	59%	84%
3416	Arts officers, producers and directors	64%	76%

SOC	Occupation Description	% of employment within creative industries 2001 Census	LFS
3421	Graphic designers	47%	59%
3422	Product, clothing and related designers	27%	25%
3431	Journalists, newspaper and periodical editors	78%	86%
3432	Broadcasting associate professionals	81%	88%
3434	Photographers and audio-visual equipment operators	38%	76%
3543	Marketing associate professionals	24%	18%
4135	Library assistants/clerks	60%	63%
5421	Originators, compositors and print preparers	22%	27%
5491	Glass and ceramics makers, decorators and finishers	2%	6%
5492	Furniture makers, other craft woodworkers	1%	1%
5495	Goldsmiths, silversmiths, precious stone workers	47%	52%
Average of all occupations		**46%**	**49%**

Source: CCI analysis of Office for National Statistics 2001 Census of Households custom table and 2006 LFS

On the surface it would appear that '5491 Glass and ceramics makers, decorators and finishers' and '5492 Furniture makers, other craft woodworkers' should not be included in our estimates; but in both cases a significant proportion of the employment is in industries that should be considered at the very least marginal creative industries and so have been included: 41 per cent of glassmakers are employed in '262 Manufacture of non-refractory ceramic goods other than for construction purposes; manufacture of refractory ceramic products', while 54 per cent of furniture makers are in '361 Manufacture of furniture'.

Both occupation classifications are included because they encompass the design and realisation of custom and handcrafted glass and furniture items.

Under our criteria, five occupations are included in the creative core which are excluded by the DCMS DEE:

1. 2132 Software professionals
2. 2451 Librarians
3. 2452 Archivists and curators
4. 3122 Draughtspersons
5. 4135 Library assistants/clerks

Conversely, we exclude 14 occupations that DCMS include in employment calculations:

1. 1136 Information & communication technology managers
2. 2126 Design and development engineers
3. 3433 Public relations officers
4. 5411 Weavers and knitters
5. 5422 Printers
6. 5423 Bookbinders and print finishers
7. 5424 Screen printers
8. 5493 Pattern makers (moulds)
9. 5494 Musical instrument makers and tuners
10. 5499 Hand craft occupations not elsewhere classified

11. 8112 Glass and ceramics process operators

12. 9121 Labourers, build & woodworking trades

13. 5244 TV, video and audio engineers

14. 5496 Floral arrangers, florists

Again, our definition of the creative core excludes these occupations as they are more closely related to the later stages of the value chain manufacture and distribution and do not intrinsically require creative skills to the same extent.

Our core definition of 'creative industries', we believe, establishes a justifiable demarcation between specialist and embedded employment, while our core definition of 'creative occupations' makes the measurement of embedded employment more robust.

The effects of this more restrictive selection on total employment data are mitigated by the fact that the methodology, relying as it does on two-dimensional occupation within industry employment datasets, still counts the employment of those in creative occupations, regardless of whether or not they work in the creative industries as defined.

4.2 Advantages of the Creative Trident approach

The Creative Trident represents an advance on previous creative industries mapping approaches in five ways:

1. Avoidance of tendency to overreach.

2. Disaggregation of creative employment to measure embedded employment within non-creative industries.

3. Decomposition of specialist and support employment within creative industries.

4. Use of population-based data sources rather than surveys, whenever possible.

5. Use of annual earnings generated from survey data of the employed (including self-employed).

4.2.1 Avoidance of overreach and robustness

From a conceptual perspective, the definition used within the Trident methodology recognises that the critical value-added of creative activity occurs at the beginning of the value chain, in the creation and publication of creative works of all kinds. CCI's methodology only considers employment as relevant for inclusion where it occurs in the core creative value chain, and not in related chains such as distribution or retailing.[35]

4.2.2 Disaggregation of embedded employment

The Trident methodology allows analysis of the extent to which embedded employment is distributed across the economy, such as the incidence of software professionals working in the finance sector and advertising professionals working in the manufacturing sector. Understanding the distribution of creative employment on a sector-by-sector basis provides an improved evidence base for policymaking decisions.

4.2.3 Breakdown of specialist and support employment

The Trident methodology explicitly separates the employment within specialist businesses into either core or support occupations. Being able easily and consistently to determine the ratios of support and management staff to creative workers and fee-earners for the creative sectors could provide fertile ground for research into the commercial viability and productivity of creative businesses. At the very least, the disaggregation helps us to understand the creative workforce and is more robust than relying on a single dimension, whether industry or occupation.

4.2.4 Use of population data

Population-based datasets are preferable because they allow us to produce true calculations, rather than sample-based estimates, of employment and earnings. While these are still subject to the normal errors involved with census data collection, such as classification errors in the coding of census returns, any such errors that do occur should be random and should therefore not affect one sector more than another.

In the Australian context, the ability of the Creative Trident methodology to take advantage of the Australian census has allowed highly robust calculations which are more accurate than previous attempts to measure the extent of creative economy activity within Australia.[36] Ongoing work by CCI indicates that results of similar quality should be obtained from application of the Trident methodology in New Zealand.

35. In addition, the methodology's use of 'occupation within industries' employment datasets reduces the likelihood of overreach in the choice of either occupations or industries: the methodology is relatively tolerant of errors from mistakenly excluding classifications; often the subsequent inclusion of an overlooked industry classification would only increase a segment's employment by 30 per cent (the support proportion) of the total employment in the overlooked industry; conversely, false inclusions have a substantial impact on total employment up to 90 per cent-95 per cent of the industry's (or occupation's) total employment as there would be little or no employment already being included from the creative occupation (or industry) employment from the other dimension.

36. For further information on the Creative Trident Methodology, see Higgs, Peter L. and Cunningham, Stuart D. (2007a) 'Australia's Creative Economy: Mapping Methodologies. Technical Report.' Brisbane: CCI. [Online]. Available at: http://eprints.qut.edu.au/archive/00002410/ [Last accessed 21/08/2007].

4.2.5 Use of earnings data

The salaries, fees and profits paid to staff and business owners broadly reflect the value of an activity to the economy (but not necessarily to society as a whole as this ignores, for example, spillover benefits). The ability to determine with reasonable accuracy the total personal earnings arising from creative employment therefore provides an indicator (if not a proxy) for its value-added.

Earnings data combine both the level of employment and the average level of remunerations received by individuals (specifically the mean income). The methodology allows the calculation of earnings from mean income of each combination of occupation within industry: graphic artists may earn substantially more working within a bank's corporate communications department than they would working for an education department, for example. This difference cannot be determined with single-dimension datasets (in this example, simply by taking the mean income of graphic artists or the mean income of banking staff or education department staff).

The Trident methodology not only calculates total earnings more accurately, but can also highlight some of the disparities between different roles within a segment. One such example – it turns out – is that managers, administrators and others in the support role in the Music and Performing Arts segment appear to earn significantly more than specialist musicians. (See Appendix 8 for examples of the types of analyses produced from Australian census personal earnings data.)

4.2.6 Applying the Creative Trident to UK data

A key strength of the Creative Trident methodology is that once the foundation analytical table has been produced from a processed dataset, a number of different analyses can be performed, each of which can reveal a different aspect of the creative workforce. Because of the reliability and coverage factors, the methodology would ideally be applied to a dataset from the full population. This would allow multiple dimensions – most importantly, the occupation for each industry of employment at full resolution, preferably within a third dimension of income bands.

The more industry and occupation classifications that are used at the detailed level, the greater the ability of researchers to distinguish activities relevant for the analysis from those that are not. In Australia, the 2001 census dataset held 1,300 occupation classifications with 500 industry classifications and with income coded within 16 bands. This resulted in over 400,000 cells with employment counts.

While census data are preferable because they avoid the small-sample and selection bias issues that can arise through sampling, some countries, such as the USA, conduct labour force surveys with good sample rates: the 1.2 million businesses included in the US sample ensure that there is almost no suppression applied to low count cells.[37]

However, the limitations in the available UK data substantially constrain the robustness and accuracy of quantitative analyses of creative employment, including the Creative Trident.

The overarching limitations of the data include:

- no single dataset reliably provides the basic information required; and
- limited coverage of the self-employed.

Specific limitations of the census data include:

- ten-year frequency of the UK census;
- low resolution of classifications, especially by industry; and
- the UK census's exclusion of individual incomes.

The major limitations of the LFS from our viewpoint are that:

- the survey basis constrains multi-dimensional analysis to sub-totals;
- there is improved but still low resolution of classifications, especially by industry;
- no income data are available for the self-employed; and
- there are inconsistencies within the census employment data at detailed levels.

In addition, the full LFS datasets are not straightforward to acquire and they required considerable processing prior to analysis – in marked contrast to the availability and research readiness of other countries' employment datasets (many of which are free to download).

37. However, this substantially under-represents the true extent of USA's creative employment; as the Occupational Employment Statistics survey, unlike the UK's LFS, does not include self-employed owners and partners in unincorporated firms, household workers, or unpaid family workers.

The following sub-sections examine each of these limitations in turn.

4.3 Overarching UK data limitations

4.3.1 No single dataset provides the basic information required

The minimal requirements for applying the Creative Trident cannot be met by a single data source in the UK: there is no full-resolution census table of employment and income for each occupation within each industry for both employees and the self-employed.

In addition, unlike the censuses in the US, Canada, New Zealand and Australia, the UK census has not historically collected data on individual incomes. Given this limitation, the Labour Force Survey data has to be used to estimate the Creative Income Trident.

4.3.2 Limited coverage of the self-employed

Additional data sources are also required to get a full picture of self-employment within the UK creative sector. Although the census covers all employment configurations, it is important to consider the coverage of self-employed individuals in other data collections, too, as the self-employment rate for the creative industries in the UK is as high as 27 per cent, and for creative occupations, 28 per cent.[38] These rates are double those found in the UK economy as a whole (13 per cent). (See Appendix 9, Self-employment rates within the creative occupations and industries.)

38. There is no reason why the two rates should be identical.

Apart from the census, the Labour Force Survey is the only relevant UK data source which provides full coverage of the self-employed.

The Annual Survey of Household Earnings (ASHE) does not survey the self-employed, since inclusion in the sample requires that the individual participate in the 'Pay as You Earn' tax scheme. The Annual Business Inquiry (ABI) does not survey non-employing enterprises, thus excluding a potentially significant number of sole-practitioner specialist creatives.

This limited coverage of the self-employed explains why we use the LFS as the sole secondary data source for adjustment and extension of census data.

4.4 Census data issues

4.4.1 Ten-year frequency of UK census

The UK census is conducted every ten years, compared with the five-yearly censuses in Canada, Australia and New Zealand. The US also has a ten-year census cycle but conducts large scale labour force surveys every three years which reduces the impact of the longer interval. The ten-year UK frequency obviously reduces the relevance of census data, especially during periods of rapid economic change and for industries subject to significant technological disruption and convergence.

The effect of these factors is exacerbated by the fact that the research repeated here is being undertaken past the mid-point of the ten-year interval; the data gathered during the most recent census are already almost seven years out of date. However, the Creative Trident methodology could help NESTA and other interested parties to lobby for improvements to the next UK census in 2011 (see Part 7, Main findings and implications).

4.4.2 Low resolution of industry and occupation classifications

The UK census does code individual occupations at a consistent and reasonably fine (i.e. four-digit) resolution, but industries of employment are coded at a much lower level, with the bulk of results classified at the three-digit level, and even a few at two digits. And few of those activities available at four-digit resolution are related to creative activities. In Australia, by contrast, census data relating to industry of employment are consistently coded at the four-digit level (and in the case of the Australian Business Register, at five digits).

Of the 172 detailed industry classification codes used in the UK 2001 census, only nine are directly relevant to the creative industries, with a further two being included after they were disaggregated (Table 4). This is low when compared with the 28 industry classifications that are available for use on Australian datasets.

Of equal concern is the variation in the resolution at which census data are classified; some industries, such as '72 Computer and Related Activities' are only available at two digits of detail, even though they account for the employment of over 540,000 people, or 2 per cent of the UK workforce; in contrast, several general manufacturing classifications include fewer than 500 people employed. A similar issue exists with '742 Architecture

and Engineering', which accounts for the employment of 390,000 people spread between many disparate fields. The situation is a little better when selecting on the basis of occupation of employment: of the 354 occupation classifications used in the UK census, only 26 are directly relevant to creative occupations (Table 5), compared with 85 in Australia and New Zealand.

4.5 Labour Force Survey dataset limitations

4.5.1 Survey basis results in the suppression of much of the detailed data

Partly to reduce the usage of possibly erroneous data, the ONS does not release LFS data in cells that hold (scaled) counts of fewer than 2,000 people. Unlike the US Bureau of Labor Statistics, with its sample size of some 1.2 million, a complete dataset of the UK LFS is unavailable to a researcher, who must work with sub-totalled cross tabulations for the creative industries and creative occupations.

At the detailed level, in a matrix with 17 rows and 28 columns, only 82 of the 476 cells contain a value, while a further 80 contain a value that is suppressed. Even entries with fewer than 2,000 people may have a significant impact at the aggregate level. The sample constraints also decrease the reliability of the mean income data for cells with lower employment counts.

4.5.2 Improved but still low resolution of classifications, especially industry

The LFS dataset still has only 18 industry classifications which fall within the CCI's definition, and one of these (Architecture and Engineering) is very broad-based, with almost equal numbers of people in non-relevant technical consulting and engineering occupations as there are in the relevant architectural occupations (Appendix 4). It is expected that the introduction of the SIC 2007 for 2008 data collection will improve this situation with up to 35 classifications being relevant if it is implemented to the fullest level of detail.

4.5.3 No income data available for the self-employed

As noted above, this is a major shortcoming that creates the potential for error to the extent that income patterns of the self-employed differ systematically from those of creative businesses' employees.

4.5.4 Lack of comparability of LFS data with census employment at the detailed levels

Comparisons at the most detailed level between the 2001 census data and the corresponding Labour Force Survey data (see Appendix 2) reveal a substantial difference in the numbers of people employed in most of the relevant industry and occupation classifications which can be as high as 20 per cent to 30 per cent, despite the fact that the total employment figure shows only a 1 per cent discrepancy between LFS and census data.

Reliably measuring creative employment requires the addition of a limited number of detailed classifications. On the assumption that there are no differences in the level of accuracy of the coding of LFS and census responses to the appropriate occupation and industry classifications, then a census should be a more accurate representation of the employment situation than a labour force survey because it has no sampling or scaling biases.

Significant variations in the employment levels of some classifications between the census and LFS could indicate that the current LFS is less than ideal for establishing the level of employment of creative segments.

It would be worth determining the extent of variation between LFS and census data and whether there are ways to reduce the discrepancies.

4.6 Methodology to address UK data issues

4.6.1 2001 census dataset

The 2001 census dataset utilises only 173 classifications at the detailed level, of which only 11 were usable within the Creative Trident industries definition (reproduced from Table 4 below).

Table 9: Creative industry – relevant classifications from the 2001 census.

Industry segment	Industry classification
Advertising and Marketing	744 Advertising
Architecture, Visual Arts and Design	362 Manufacture of jewellery and related articles
	742 Architectural and engineering activities and related technical consultancy
Film, TV, Radio and Photography	921 Motion picture and video activities
	922 Radio and television activities
Music and Performing Arts	920 Recreational, cultural and sporting activities n.o.s.
	923 Other entertainment activities
Publishing	221 Publishing
	924 News Agencies
	925 Library, archives, museums and other cultural activities
Software, Computer Games & Electronic Publishing	72 Computer and related activities

The list above was determined by analysing each industry classification in (up to) three ways:

1. By referring to the classification coding index that is used when processing a census or LFS return (see Appendix 11 for an explanation of coding lists).

2. By referring to a table generated from the census data that shows the proportion of occupations employed within the industry classification (see Appendix 6) looking for industries where the creative occupations typically account for more than 25 per cent of the industry's employment.

3. By correlating the proportions of the more detailed (four-digit) industries available in the LFS dataset to the three-digit aggregation level or, in the case of '72 Computer and related activities', to the two-digit level used within the census (see Appendix 2).

Two segments emerged from this analysis which had significant 'candidate' industry classifications, but they were deemed to encompass too many out-of-scope activities, and would require disaggregation in order to avoid distorting the results.

Consequently the number of people employed within the detailed data records for '72 Computer and related activities' was split between '7220 Computer Software consultancy' (relevant) and '7260 Other computer activities' (not relevant). In the same way, the number of people employed within '742 Architectural and engineering Services' was split between '74201 Architecture Services' (relevant) and '74209 Other Technical Services' (not relevant).

The disaggregation of occupations within industry data records is not the same as scaling an analysis of employment by industry. The process is described in Appendix 12, Census 2001: Disaggregating the data records of two industry classifications.

4.6.2 1981 and 1991 census datasets

As noted above (see section 2.3, 'Caveats'), the analysis of historical census datasets, even those only 10 or 20 years old, presents challenges when trying to establish the emergence and growth of new sectors. The standard industry and occupation classifications used to measure employment are changed infrequently, and can lag the appearance of significant new activity by up to 15 years.

Such is the case with the 1981 and 1991 censuses, in which despite implementing 310

industry classifications and thereby having 50 per cent more industry classification than the 2001 census, only 11 were considered directly relevant for our purposes. The limitations of the available industry classifications in the 1981 and 1991 census include the absence of any relevant architecture and design classifications, and the excessively broad definition of computer services, which encompass many hardware-related activities beyond the scope of our study.

Occupation classifications in the 1981 and 1991 censuses fared slightly better, with 20 out of the 373 utilised being relevant to the creative economy.

Table 10: Creative employment-relevant industry and occupation classifications from the 1981 and 1991 censuses.

Segment	Industry classifications	Occupation classifications
Advertising and Marketing	8380 Advertising	123 Advertising and public relations manager
Architecture, Design & Visual Arts	4910 Jewellery and coins	381 Artists, commercial artists, graphic designers
		382 Industrial designers
		260 Architects
		310 Draughtspersons
		216 Design and development engineers
		303 Architectural and town planning technicians
		590 Glass product and ceramic makers
		591 Glass product and ceramic finishers and decorators
		518 Goldsmiths, silversmiths, precious stone workers
		383 Clothing designers
Film, TV, Radio and Photography	9711 Film production, distribution and exhibition	386 Photographers, camera, sound and video equipment operators
	9741 Radio and television services, theatres, etc.	525 Radio, TV and video engineers
Music & Performing Arts	3452 Gramophone records and pre-recorded tapes	176 Entertainment and sports managers
	9760 Authors, music composers and other own account artists not elsewhere specified	384 Actors, entertainers, stage managers, producers and directors
		385 Musicians
Publishing	4751 Printing and publishing of newspapers	380 Authors, writers, journalists
	4752 Printing and publishing of periodicals	270 Information officers and technical librarians
	4753 Printing and publishing of books	271 Archivists and curators
	9770 Libraries, museums, art galleries, etc.	
Software, Computer Games & Electronic Publishing	8394 Computer services	214 Computer analyst/programmers

The 'occupation within industry' datasets provided from the 1981 and 1991 censuses were based on a 10 per cent sampling rate; the results of the analysis were therefore multiplied by a factor of 10.

4.7 Conclusion

The various limitations of the UK data discussed in this section means that the Creative Trident mapping is constrained in terms of the accuracy and robustness of results. This implies a considerably greater margin of error than the Creative Tridents calculated for Australia and New Zealand, for example. More robust estimates will require the statistical authorities to address the underlying issues of classification coarseness and coverage in the primary data sources.

Part 5: UK Creative Trident results

This part presents: the UK Creative Employment Trident, incorporating specialist, support and embedded creative employment for 1981, 1991 and 2001; growth rates in creative employment; the Creative Income Trident (the levels of creative earnings for specialist, support and embedded creative workers from 2001 to 2006); and the distribution of embedded creative occupations across non-creative industries for 2001 to 2006. Growth in creative employment and earnings is compared with economy-wide averages for the relevant periods.

5.1 UK Creative Employment Tridents: 1981, 1991 and 2001

Table 11 shows that in the 1981 household census there were approximately 900,000 people in creative employment, representing 3.9 per cent of the workforce.

Table 11: The UK Creative Employment Trident for 1981 from the census.

UK Employment 1981	Employment within Creative Industries	Employment within Non-Creative Industries	Total Employment	Embedded Proportion
Employment in Specialist Creative Occupations	157,020	457,130	614,150	74%
Employment in Business and Support Occupations	288,850		288,850	
Total Employment	445,870	457,130	903,000	51%
Creative Occupation (Specialist) Proportion	35%		68%	

Source: Analysis by CCI of custom data table from the Office for National Statistics

Table 12: The UK Creative Employment Trident for 1991 from the census.

UK Employment 1991	Employment within Creative Industries	Employment within Non-Creative Industries	Total Employment	Embedded Proportion
Employment in specialist Creative Occupations	285,460	524,750	810,210	65%
Employment in Business and Support Occupations	313,440		313,440	
Total Employment	598,900	524,750	1,123,650	47%
Creative Occupation (Specialist) Proportion	48%		72%	

Source: Analysis by CCI of custom data table from the Office for National Statistics

Of these, almost half were employed in businesses working in the creative industries. Those working in specialist creative occupations represented only 35 per cent of the employment in creative industries.

The remaining people in creative employment – those working outside the creative industries – represent 74 per cent of those in creative occupations. However, it is quite likely that a significant degree of this 'embedded' employment is due to the limited ability of the industry classifications used over the period to capture many of the newer specialist creative business activities.

Table 12 shows that the number of people in creative employment had risen to over 1.1 million by 1991. Growth in the number of specialist creative occupations in the creative industries appears to have been particularly marked and this growth cannot be discounted as being the result of classification shifts as there was insignificant change in those over the period.[39]

Table 13 illustrates that the total level of creative employment increased substantially between 1991 and 2001, rising to almost 1.9 million people, or 7.1 per cent of the UK's workforce. There were 1.2 million people employed in the creative industries, representing 66 per cent of total creative employment. Again, growth appears to have been particularly rapid in the number of specialists but there was also a significant increase in the number of support workers.

39. There was no change at all in industry classifications while occupation classifications saw the splitting of one computer-related classification into two and similarly of Information officers and technical librarians into two library classifications.

Table 13: The UK Creative Employment Trident for 2001 from the census.

UK Employment 2001	Employment within Creative Industries	Employment within Non-Creative Industries	Total Employment	Embedded Proportion
Employment in specialist Creative Occupations	552,170	645,067	1,197,237	54%
Employment in Business and Support Occupations	690,641		690,641	
Total Employment	1,242,811	645,067	1,887,878	34%
Creative Occupation (Specialist) Proportion	44%		63%	

Source: Analysis by CCI of custom data table from the Office for National Statistics

5.1.1 Growth rates in UK creative employment

Over the 20-year period between the 1981 census and the 2001 census, creative employment in the UK experienced a long-run annual growth rate of 3.8 per cent, substantially higher than the overall growth in UK employment of 0.8 per cent (Table 14).

Between these two censuses, specialist employment – that is, those in creative occupations working within the creative industries – experienced the highest growth rate of all categories, at 6.5 per cent.

Over a longer 25-year period the average annual growth rate of creative employment remained significantly higher (at 3.2 per cent) than that of the total workforce (at 0.8 per cent).

Consistent with the findings of NESTA (2007)[40] the proportion of embedded employment has actually fallen over the period from 51 per cent of total creative employment in 1981 to 34 per cent in 2001 on census data and has remained at 35 per cent since using the LFS dataset – despite the absolute growth in embedded employees.

40. NESTA (2007) 'How linked are the UK's creative industries to the wider economy?: An input-output analysis.' London: NESTA. [Online]. Available at: http://www.nesta.org.uk/assets/pdf/experian_working_paper_NESTA.pdf [Last accessed 14/11/2007].

Table 14: The long-run growth rates of creative employment and the UK workforce 1981 to 2001 from census data and 2002 to 2006 from LFS data.

Mode	Census				LFS					
	1981	1991	2001	20-year ave.	2002	2003	2004	2005	2006	25-year ave.
Specialist	157,020	285,460	552,170	6.5%	631,992	649,200	647,749	663,161	699,931	6.2%
Support	288,850	313,440	690,641	4.5%	592,721	596,339	603,336	587,665	585,111	2.9%
Creative Industries	445,870	598,900	1,242,811	5.3%	1,224,713	1,245,539	1,251,085	1,250,826	1,285,042	4.3%
Embedded	457,130	524,750	645,067	1.7%	669,741	679,210	686,576	668,883	698,244	1.7%
Creative Occupations	614,150	810,210	1,197,237	3.4%	1,301,733	1,328,410	1,334,325	1,332,044	1,398,175	3.3%
Creative Employment	903,000	1,123,650	1,887,878	3.8%	1,894,454	1,924,749	1,937,661	1,919,709	1,983,286	3.2%
UK workforce	22,866,100	23,452,230	26,575,775	0.8%	27,498,190	27,712,671	27,831,843	28,018,647	28,165,612	0.8%
Embedded share of Creative Employment	51%	47%	34%		35%	35%	35%	35%	35%	
Share of UK Workforce	3.9%	4.8%	7.1%		6.9%	6.9%	7.0%	6.9%	7.0%	

Source: Analysis by CCI of custom census and LFS data tables from the Office for National Statistics

Table 15: Comparison of CCI employment estimates with those in DCMS Economic Estimates.

Year	Source	Specialist	Support	Creative Industries	Embedded	Total Creative Employment	Comparison to DCMS
1981	Census (CCI)	157,020	288,850	445,870	457,130	903,000	N/A
1991	Census (CCI)	285,460	313,440	598,900	524,750	1,123,650	N/A
2001	Census (CCI)	552,170	690,641	1,242,811	645,067	1,887,878	3.3% higher
	Economic Estimates	Not provided		1,074,600	753,500	1,828,100	
2002	LFS (CCI)	631,992	592,721	1,224,713	669,741	1,894,454	3.5% higher
	Economic Estimates	Not provided		1,088,900	741,600	1,830,800	
2003	LFS (CCI)	649,200	596,339	1,245,539	679,210	1,924,749	2.4% higher
	Economic Estimates	Not provided		1,107,800	770,800	1,878,700	
2004	LFS (CCI)	647,749	603,336	1,251,085	686,576	1,937,661	6.4% higher
	Economic Estimates	Not provided		1,057,300	767,400	1,825,000	
2005	LFS (CCI)	663,161	587,665	1,250,826	668,883	1,919,709	5.2% higher
	Economic Estimates	Not provided		1,045,400	779,100	1,824,400	
2006	LFS (CCI)	699,931	585,111	1,285,042	698,244	1,983,286	4.0% higher
	Economic Estimates	Not provided		1,108,900	797,400	1,906,400	

Source: Analysis by CCI of DCMS reports and custom census and LFS data tables from the Office for National Statistics

5.1.2 Comparison with DCMS estimates

Our calculations of the overall numbers of people in creative employment sit well with the total employment numbers modelled for the DCMS Economic Estimates (DEE), varying by as little as 2.4 per cent (2003) to 6.2 per cent (2004).

Comparison of the different modes of employment reveals that our results generally show higher levels of employment within the creative industries (1.2 million people versus 1.1 million in 2001) and lower levels of embedded employment (645,000 versus 787,400). Because we can show where the embedded employment occurs across the broader economy,[41] we feel that our calculations are the more robust.

Appendix 13 provides more details of the breakdown of the estimates for each of the creative segments for 1981, 1991 and 2001 and a comparison with the DCMS segment estimates.

Over the long period between 1981 and 2001 there have been substantial changes in the proportional breakdown of the segments, with growth in Advertising and Marketing as well as the Software, Computer Games and Electronic Publishing segment being particularly strong (Table 16). While some of these shifts inevitably result from classification changes, especially revised industry classifications, they also probably reflect genuine changes in the relative importance of these creative activities.

It is worth noting that each segments' share of creative employment has remained broadly flat since 2001 according to the LFS data.

The estimates in Appendix 13 reveal Architecture, Visual Arts and Design, Advertising and Marketing and Software, and Computer Games and Electronic Publishing to be the most embedded creative activities, with 52.9 per cent, 44.1 per cent and 35.9 per cent embedded shares in creative employment respectively. Music and Performing Arts are the least embedded, with an embedded employment share of just 15.6 per cent.

41. See subsection 5.4.

Table 16: Segment shares of overall creative employment for 1981 to 2006 and long-run growth rates of employment.

Creative Segment	Segment's share				Segment's share					
	1981	1991	2001	20-year ave.	2002	2003	2004	2005	2006	25-year ave.
Advertising and Marketing	5%	6%	10%	6.7%	11%	11%	11%	11%	11%	6.3%
Architecture, Visual Arts and Design	32%	26%	20%	1.4%	22%	22%	23%	22%	22%	1.7%
Film, TV, Radio and Photography	13%	10%	10%	2.4%	9%	9%	9%	9%	9%	1.6%
Music and Performing Arts	10%	11%	9%	3.4%	9%	10%	10%	10%	10%	3.5%
Publishing	26%	22%	20%	2.5%	18%	18%	18%	17%	17%	1.4%
Software, Computer Games & Electronic Publishing	14%	25%	31%	8.0%	30%	30%	30%	30%	31%	6.5%
Creative Workforce				3.8%						3.2%

Source: Analysis by CCI of DCMS reports and custom census and LFS data tables from the Office for National Statistics

5.2 Creative Income Tridents: 2001 to 2006

Earnings in the creative sector are determined by combining the mean weekly income data specific to each combination of 'occupation within industry', as provided by the LFS survey on the basis of 'main job', with estimates of employment from the Creative Employment Trident (Table 17).[42]

The LFS dataset provides a value for the average income for each year from 2002-2006 for each combination of creative occupation within each creative industry. Thus, we know that the average weekly earning for the 1,860 graphic designers working in businesses in the Book publishing industry is £268, which is less than the £929 a week the 1,378 Journalists and editors working in the same industry earn.

It is not straightforward to establish the annual earnings and mean incomes for census-based 2001 creative employment because census industry classifications are not at the same level of detail as those used in the LFS – so it is not possible directly to apply the value of average earnings for each specific industry/occupation from 2001 from the two data sources. Instead, we weight the means for each creative segment which we then apply to the segments from the census data.

The average weekly income figure for each occupation within industry is then multiplied by the number of people employed to generate the annual earnings for that combination (of occupations within industry). Dividing the 2001 annual earnings of each segment, for each mode, by the respective number of people employed produces a weighted mean annual income (for each segment, mode of employment and year).

The LFS-derived weighted means for 2001 are then applied to the Trident employment results of the disaggregated 2001 census data to generate census-employment-based annual earnings.

42. More work needs to be done to improve the consistency of the income data: unfortunately the LFS does not collect personal income data for the self-employed. Using Family Resources Survey data, however Blanchflower, D. and Shadforth, C. (2007) 'Entrenpreneurship in the UK, Foundations and Trends in Entrenpreneurship.' Volume 3(4): pp.257-364, compare the nominal mean incomes of employees to those of the self-employed; with the exception of the 2004 data, they are very similar.

Table 17: The Creative Income Trident: total value of annual earnings generated through creative workforce salaries and wages for 2001 to 2006.

Millions of £ p.a. generated through salaries and wages	2001	2002	2003	2004	2005	2006	Annualised growth rate 2001-06
Embedded	£15,620	£16,630	£17,290	£17,650	£17,550	£18,680	3.6%
Specialist	£14,680	£16,830	£17,890	£18,340	£19,310	£21,530	8.0%
Support	£17,550	£15,790	£15,970	£17,590	£16,880	£16,850	-0.8%
Creative Occupations	£30,360	£33,460	£35,170	£35,990	£36,860	£40,200	5.8%
Creative Industries	£32,350	£32,620	£33,860	£35,930	£36,190	£38,380	3.5%
Creative Employment	£47,910	£49,250	£51,140	£53,580	£53,740	£57,050	3.6%
UK workforce	£568,990	£500,470	£520,220	£542,720	£568,220	£593,170	0.8%
Creative Share of UK Earnings	8.4%	9.8%	9.8%	9.9%	9.5%	9.6%	

Source: Analysis by CCI of custom census and LFS data tables from the Office for National Statistics

It is worth noting that on these estimates the earnings from creative employment have risen to almost 10 per cent of the UK total workforce earnings in 2006 (Table 17). By way of comparison the DCMS Economic Estimates report shows that the Creative Economy's share of UK Gross Value Added is 7.3 per cent in 2005 (excluding Crafts and Design).

Parallels between annual earnings and Gross Value Added

The methodologies and the datasets used to calculate the creative annual earnings (employment and average incomes) are in general different from those used for the determination of gross value added (GVA). Typically GVA estimates rely on input-output tables derived from surveys and often lag employment datasets in their release by several years. This raises the possibility that the earnings data may provide policymakers with a timely indicator of activity in the creative sectors.

Table 18: The mean annual income of the Creative Segments and the modes of employment for 2006.

Segment	Embedded	Specialist	Support	Creative Occupations	Creative Industries	Creative Employment
Advertising and Marketing	£24,370	£35,900	£23,550	£27,240	£29,590	£26,480
Architecture, Visual Arts and Design	£23,090	£26,000	£30,600	£24,370	£27,110	£25,130
Film, TV, Radio and Photography	£23,100	£30,730	£32,520	£29,480	£31,340	£30,400
Music and Performing Arts	£14,480	£24,940	£21,450	£22,740	£22,440	£21,880
Publishing	£18,490	£25,410	£21,050	£23,020	£23,360	£22,300
Software, Computer Games & Electronic Publishing	£34,810	£39,150	£39,600	£36,730	£39,360	£37,560
All Creative Segments	£26,750	£30,750	£28,800	£28,750	£29,860	£28,770

Source: Analysis by CCI of custom LFS data tables from the Office for National Statistics

Comparing specialist, support and embedded average annual incomes

The mean annual income in the UK in 2006, determined by data from the LFS for those in creative employment, was £28,770 (Table 18). This compares favourably with the mean for the UK workforce as a whole of £21,060. However, there is substantial variation between mean incomes across the segments and across the modes of employment.

According to these data, those working in Music and Performing Arts have the lowest mean income, at £21,880. Musicians working outside the creative industries appear to be particularly low paid, averaging £14,480. These results are similar to those found in the Australian data. Support workers in the software, computer games and electronic publishing segment are the highest earners with a mean income of £39,600.

5.3 Comparing creative incomes with UK average earnings

In line with the Australian Trident results, most of the modes of employment within the creative segments earn more than the overall UK average. The two main exceptions are the embedded modes within Music and Performing Arts and Publishing occupations which earn 31 per cent less and 12 per cent less, respectively, than the UK average (Table 19).

Table 19: Comparison of mean incomes of creatives with the UK mean in 2006.

Segment and Mode	Mean Annual income 2006	Compared with UK Mean
Music and Performing Arts - Embedded	£14,480	-31%
Publishing - Embedded	£18,490	-12%
Publishing - Support	£21,050	0%
Music and Performing Arts - Support	£21,450	2%
Architecture, Visual Arts and Design - Embedded	£23,090	10%
Film, TV, Radio and Photography - Embedded	£23,100	10%
Advertising and Marketing - Support	£23,550	12%
Advertising and Marketing - Embedded	£24,370	16%
Music and Performing Arts - Specialist	£24,940	18%
Publishing - Specialist	£25,410	21%
Architecture, Visual Arts and Design - Specialist	£26,000	23%
All Creative Segments - Embedded	£26,750	27%
All Creative Segments - Support	£28,800	37%
Architecture, Visual Arts and Design - Support	£30,600	45%
Film, TV, Radio and Photography - Specialist	£30,730	46%
All Creative Segments - Specialist	£30,750	46%
Film, TV, Radio and Photography - Support	£32,520	54%
Software, Computer Games & Electronic Publishing - Embedded	£34,810	65%
Advertising and Marketing - Specialist	£35,900	70%
Software, Computer Games & Electronic Publishing - Specialist	£39,150	86%
Software, Computer Games & Electronic Publishing - Support	£39,600	88%

Source: Analysis by CCI of custom LFS data tables from the Office for National Statistics

Table 20: Annualised growth rates over 2001 to 2006 of employment, earnings and mean income of the creative segments and the UK workforce.

Segment	Employment	Earnings	Mean Income
UK workforce	1.2%	4.7%	3.5%
Advertising and Marketing	4.5%	5.1%	0.6%
Architecture, Visual Arts and Design	2.5%	5.2%	2.6%
Film, TV, Radio and Photography	-1.5%	3.1%	4.7%
Music and Performing Arts	4.0%	7.9%	3.7%
Publishing	-2.7%	-0.3%	2.5%
Software, Computer Games & Electronic Publishing	0.9%	3.2%	2.3%
All Creative Segments	1.0%	3.6%	2.5%

Source: Analysis by CCI of custom census and LFS data tables from the Office for National Statistics

At the other end of the spectrum the mean income for support workers in the Software, Computer Games & Electronic Publishing segment are 88 per cent higher than the national average, while Advertising specialists earn 70 per cent higher.

5.3.1 Summary of five-year growth rates
Bringing some of these data together, it is clear that over the period from 2001 to 2006, the growth rate of employment, earnings and mean income of the creative segment has been positive but slightly below that in the UK as a whole. Employment grew at 1 per cent per year on average compared with UK-wide growth of 1.2 per cent, while mean incomes grew 2.5 per cent per year versus UK-wide growth of 3.5 per cent (Table 20).

Four per cent growth per year on average in Music and Performing Arts employment combined with 3.7 per cent growth in mean income led to a growth in average earnings of 7.9 per cent, albeit from a low base. The Film, TV, Radio and Photography segment saw a shrinkage in employment of -1.5 per cent per year on average over this period, but an overall rise in mean incomes at 4.5 per cent.

The previous twenty-year period of high growth in employment in the Software, Computer Games & Electronic Publishing segment has slowed to just under 1 per cent per year on average with mean income close to the average growth rate for all creative segments at 2.3 per cent as a result.

5.4 UK Whole-Economy Trident

5.4.1 The distribution of embedded creative employment in non-creative industries, 2001 to 2006
We have discussed how the detailed two-dimensional datasets used to calculate the Creative Trident allow additional types of analysis which are not possible using single-dimension, occupation-based or industry-based employment datasets.

It is particularly interesting to examine the distribution of embedded employment across the whole economy, either at the single-digit 'division' level or at the more detailed two-digit industry level. Table 21 also shows the Divisions in which the specialist creative industries are located; and within the creative industries, the breakdown between specialist and support employment.

The only creative employment within most Divisions is through embedded employment (the right-hand column), people working in creative occupations outside the specific creative industries. Outside Industry Divisions which include creative industries, embedded creative workers appear to be relatively more important in financial intermediation than in any other Industry Division. However, three Divisions (D, K, and O) also incorporate

Table 21: UK employment as at 2001 census by Industry Division.

UK Employment as at 2001 Census by Industry Division	Total Employment	Creative Workforce	Share	Creative Industries	Specialists	Embedded Creatives
A Agriculture, hunting and forestry	423,654	3,134	0.7%			3,134
B Fishing	13,145	68	0.5%			68
C Mining and quarrying	90,129	2,023	2.2%			2,023
D Manufacturing	3,930,903	353,993	9.0%	190,581	68,170	163,412
E Electricity, gas and water supply	199,075	7,135	3.6%			7,135
F Construction	1,830,962	21,049	1.1%			21,049
G Wholesale and retail trade	4,415,437	61,362	1.4%			61,362
H Hotels and restaurants	1,286,375	7,987	0.6%			7,987
I Transport, storage and communication	1,844,249	45,065	2.4%			45,065
J Financial intermediation	1,242,275	57,150	4.6%			57,150
K Real estate, business activities	3,371,837	793,991	23.5%	643,506	306,328	150,485
L Public administration	1,573,466	35,325	2.2%			35,325
M Education	2,058,329	43,026	2.1%			43,026
N Health and social work	2,922,064	28,041	1.0%			28,041
O Other community	1,336,538	427,861	32.0%	408,724	177,672	19,137
P Private households with employed persons	23,325	85	0.4%			85
Q Extra-territorial	14,017	583	4.2%			583
Total employment across all industries	26,575,780	1,887,878	7.1%	1,242,811	552,170	645,067

Source: Analysis by CCI of custom census 2001 data tables from the Office for National Statistics

employment within the creative industries, in both specialist creative capacities and in embedded employment.

This Division K (Real estate, business activities) has the highest employment of specialist creatives, with 306,328 people, as well as the second-highest level of embedded employment (150,485). It is therefore worth examining in further detail (Table 22).

Division includes three creative industries classifications: '7220 Computer software consultancy', '74201 Architectural services' and '744 Advertising services', as well as 12 industries outside the 'creative' definition.

Unsurprisingly, 88 per cent of the creative occupations employed within 'Computer software consultancy' are also from that segment, with architecture, design and visual arts-related occupations accounting for 7 per cent. Similarly, 95 per cent of those employed in creative occupations within 'Architecture services' are architecture, design and visual arts-related.

However, the picture changes when the pattern of embedded employment is examined in non-creative industries in Division K, such as the very broad '741 Legal, accounting, business consultancy' which accounts for over 40,000 people in embedded creative

Table 22: Looking within Division K: The extent of specialist and embedded employment.

Detailed Industry of Employment within Division K	The Segment of those employed in Creative Occupations						Total
	Advertising and Marketing	Architecture, Design & Visual Arts	Film, TV, Radio and Photography	Music & Performing Arts	Publishing	Software, Computer Games & Electronic Publishing	
Creative Occupations employed in Creative Industries (Specialists)							
7220 Computer Software consultancy	4,430	12,358	1,113	425	3,756	156,254	178,336
74201 Architectural Service	975	76,988	1,405			1,555	80,923
744 Advertising	30,483	7,997	3,760	504	2,669	1,656	47,069
Specialists Subtotal	35,888	97,343	6,278	929	6,425	159,465	306,328
Creative Occupations in other industries (Embedded)							
70 Real Estate activities	1,390	3,143	578	516	761	1,835	8,223
71 Renting of machinery and equipment	545	518	847	148	147	785	2,990
7260 Other computer activities	492	1,374	124	47	417	17,362	19,816
73 Research and development	1,313	944	245	49	1,337	3,507	7,395
740 Other business activities n.o.s.	98	105	27	16	52	242	540
741 Legal, accounting, business consultancy	15,142	5,313	1,178	1,047	4,356	13,349	40,385
74209 Engineering Services	975	1,243	179	630	1,682	4,990	9,699
743 Technical testing and analysis	178	265	92	50	140	440	1,165
745 Labour recruitment of personnel	1,175	1,465	424	365	629	2,178	6,236
746 Investigation and security	127	180	85	25	82	491	990
747 Industrial cleaning	192	284	79	79	480	294	1,408
748 Miscellaneous business activities	2,715	19,400	15,816	1,631	8,348	3,728	51,638
Embedded Occupation Subtotal	24,342	34,234	19,674	4,603	18,431	49,201	150,485
Total Creative Occupations employed within K Division	60,230	131,577	25,952	5,532	24,856	208,666	456,813

Source: Analysis by CCI of custom census 2001 data tables from the Office for National Statistics

roles, of which 37 per cent are in advertising and marketing functions, 33 per cent are in software development and 13 per cent are in architecture, design and visual arts roles.

As Table 23 illustrates, the Trident methodology provides a much stronger basis than single-dimension employment by industry or occupation tables for analysing and identifying patterns in employment. (See Appendix 14 for a series of tables showing the level of embedded employment for the industry subdivisions.)

5.4.2 The growth in creative employment within non-creative industries

Between 1981 and 2001 there was a substantial rise in the level of embedded employment across nearly all sectors of the economy (Table 23). The largest increase in the share of embedded creative employment was in Division J (Financial intermediation), up from 1.6 per cent in 1981 to 4.6 per cent in 2001, followed by Division I (Transport, storage and communication), where the embedded proportion increased from 0.6 per cent to 2.4 per cent. Only three divisions (K, N and O)

Table 23: The change in the embedded share of employment by Division between 1981 and 2001.

Industry Divisions	Embedded Creative's Share of Division Employment			Change over 20 Years
	1981	1991	2001	
A Agriculture, hunting and forestry	0.1%	0.1%	0.7%	0.7%
B Fishing	0.3%	0.1%	0.5%	0.2%
C Mining and quarrying	0.9%	1.8%	2.2%	1.3%
D Manufacturing	3.1%	3.4%	4.2%	1.1%
E Electricity, gas and water supply	2.3%	3.0%	3.6%	1.3%
F Construction	0.8%	0.6%	1.1%	0.4%
G Wholesale and retail trade; repair of motor vehicles	1.1%	1.2%	1.4%	0.3%
H Hotels and restaurants	0.2%	0.3%	0.6%	0.4%
I Transport, storage and communication	0.6%	0.9%	2.4%	1.8%
J Financial intermediation	1.6%	2.7%	4.6%	3.0%
K Real estate, renting and business activities	6.1%	6.3%	4.5%	-1.7%
L Public administration and defence	0.6%	0.6%	2.2%	1.7%
M Education	1.3%	1.4%	2.1%	0.8%
N Health and social work	1.8%	1.4%	1.0%	-0.8%
O Other community, social and personal service activities	2.7%	3.1%	1.4%	-1.3%
P Private households with employed persons	0.1%	0.0%	0.4%	0.3%
Q Extra-territorial organisation and bodies	3.3%	4.0%	4.2%	0.9%
Total across all Divisions	2.1%	2.3%	2.4%	0.4%

Source: Analysis by CCI of custom census tables from the Office for National Statistics

showed a decline in the share of embedded creative employment over the period; the most significant of these was the fall from 6.1 per cent to 4.5 per cent in Division K.

Table 24 shows that for the shorter period 2001 to 2006 and using LFS data, there was no appreciable change in the share of embedded creatives in Division employment, except in Division L (Public administration), where the figure increased from 2.3 per cent to 3 per cent, and Division K, in which it appeared to rise slightly over the course of the five years.

Table 24: The change in the embedded share of employment by Division between 2001 and 2006.

Division	2001	2002	2003	2004	2005	2006
A Agriculture, hunting and forestry	0.3%	1.7%	0.9%	0.7%	0.7%	0.6%
B Fishing	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%
C Mining and quarrying	2.3%	2.4%	2.0%	3.0%	2.5%	2.3%
D Manufacturing	4.7%	4.4%	3.5%	4.6%	4.4%	4.7%
E Electricity, gas and water supply	3.4%	2.9%	2.4%	3.5%	3.3%	3.2%
F Construction	1.9%	1.7%	1.3%	1.6%	1.5%	1.5%
G Wholesale and retail trade; repair of motor vehicles	1.5%	1.4%	1.5%	1.7%	1.6%	1.7%
H Hotels and restaurants	0.4%	0.5%	0.5%	0.4%	0.5%	0.5%
I Transport, storage and communication	2.7%	2.2%	2.3%	2.4%	2.1%	2.2%
J Financial intermediation	5.4%	5.2%	4.8%	4.9%	5.1%	5.1%
K Real estate, renting and business activities	4.1%	4.3%	3.9%	4.4%	4.4%	4.4%
L Public administration and defence	2.3%	2.4%	2.5%	2.7%	2.5%	3.0%
M Education	1.9%	2.1%	1.6%	1.8%	1.8%	1.8%
N Health and social work	0.7%	0.7%	0.8%	0.8%	0.8%	0.8%
O Other community, social and personal service activities	1.1%	1.0%	1.2%	1.2%	1.2%	1.3%
P Private households with employed persons	0.2%	0.0%	0.2%	0.1%	0.0%	0.1%
Q Extra-territorial organisation and bodies	4.1%	6.0%	6.8%	4.1%	6.8%	4.5%
Total	2.5%	2.4%	2.2%	2.5%	2.4%	2.5%

Source: Analysis by CCI of custom LFS tables from the Office for National Statistics

Part 6: Applying the Trident methodology to Financial Services

One of the advantages of the Trident methodology is that it can also be applied to other industries and occupations allowing for inter-sector comparisons on a consistent basis. Using census data, this exercise has been undertaken for the UK financial services sector, permitting a point of comparison with creative industries and occupations.

Overall, on this measure, the 2001 Financial Trident is 8 per cent larger than the Creative Trident, with two million employed in the financial economy, 150,000 more people than in the Creative Trident. Over 1.2 million are employed in specialist financial services roles, almost 800,000 of whom are in financial roles outside the core financial services industry.

The picture of embeddedness this paints is similar to the Creative Trident, in that specialist occupations, whether creative or financial, account for a significant 63 per cent share of Trident employment, of which 34 per cent is embedded employment, in the case of the creative economy and 39 per cent in the case of financial services.

Interestingly total employment in the Financial Trident fell significantly between 1981 and 1991, from 2.9 million people to 1.8 million (Table 26), but recovered somewhat in 2001, growing to just over two million people, while the creative economy expanded throughout the period.

Table 25: The UK Financial Employment Trident for 2001.

UK Employment 2001	Employment within Financial Industries	Employment within Non-Financial Industries	Total Employment	Embedded Proportion
Employment in specialist Financial Occupations	477,421	798,541	1,275,962	63%
Employment in non -Financial Occupations	764,854		706,682	
Total Employment	1,242,275	798,541	2,040,816	39%
Financial Occupation (Specialist) Proportion	38%		63%	

Source: Analysis by CCI of custom data table from the Office for National Statistics

Table 26: Employment within the UK Financial Employment Trident from 1981 to 2001.

Mode	1981	1991	2001
Specialist Finance Professional	536,580	382,710	477,421
Support staff	273,540	674,670	764,854
Finance Industry sub-total	810,120	1,057,380	1,242,275
Embedded finance staff	2,097,690	755,680	798,541
Finance Occupations Subtotal	2,634,270	1,138,390	1,275,962
Total Financial Workforce	2,907,810	1,813,060	2,040,816
Share of Workforce	12.7%	7.7%	7.7%

Source: Analysis by CCI of custom data table from the Office for National Statistics

A substantial proportion of the drop in employment from 1981 to 1991 occurs within the occupation classification '400 Accounts and wages clerks, book-keepers, other financial clerks' which accounted for some 2.3 million people in 1981, whereas in 1991 the equivalent SOC '410 Accounts and wages clerks, book-keepers, other financial clerks' employed under 1.2 million people.

This change may reflect the productivity impact of computerisation on the financial management of businesses throughout the economy and the reduction in the employment of bank tellers in favour of ATMs. The difference in long-run trends between financial and creative employment raises the possibility that the extent to which technological change substitutes for skilled employment differs in the two sectors – a topic for future research.

Table 27 breaks down finance employment across the wider economy, represented again by the Industry Divisions.

Table 27 : 2001 UK Financial Employment Trident by Industry Division.

Industry Division	Total Employment	Finance Employment Share	Specialist and Embedded Finance Occupations	Support Staff Finance Industry
A Agriculture, hunting and forestry	423,654	0.8%	3,444	
B Fishing	13,145	1.2%	156	
C Mining and quarrying	90,129	3.9%	3,522	
D Manufacturing	3,930,903	2.7%	106,585	
E Electricity, gas and water supply	199,075	4.7%	9,303	
F Construction	1,830,962	1.8%	32,574	
G Wholesale and retail trade	4,415,437	2.4%	106,306	
H Hotels and restaurants	1,286,375	1.1%	14,761	
I Transport, storage and communication	1,844,249	4.0%	73,055	
J Financial intermediation	1,242,275	95.3%	477,421	764,854
K Real estate, renting and business activities	3,371,837	8.4%	282,907	
L Public administration	1,573,466	5.0%	78,715	
M Education	2,058,329	1.1%	23,560	
N Health and social work	2,922,064	1.2%	36,346	
O Other community, social and personal	1,336,538	2.0%	26,880	
P Private households with employed persons	23,325	0.2%	40	
Q Extra-territorial organisation and bodies	14,017	2.8%	387	
Total across all Divisions	26,575,780	7.7%	1,275,962	764,854

Source: Analysis by CCI of custom census 2001 data tables from the Office for National Statistics

43. Excluding financial intermediation, extra-territorial and private households with employed persons.

Some Divisions, such as Division K (Real estate, renting and business activities) employ very large numbers of people (approaching 300,000) in embedded finance roles; in this case accounting for 8.4 per cent of the Division's total employment. This reflects the employment of a range of financial consultants within '741 Legal, accounting, business consultancy'.

Of the 14 major industries,[43] four have around 1.2 per cent of their workers in financial employment; this might plausibly represent the minimum level of financial specialists required for most business operations.

6.1 Parallels with the Creative Trident

The Industry Division Trident reveals further similarities between embedded employment in the financial and creative economies. In particular, while the levels are far from identical, there appears to be a moderate degree of correlation (51.2 per cent) between those sectors with higher finance embedded shares and those with higher creative embedded shares (Table 28).

Table 28: Comparison of financial and creative embedded shares by Industry Division.

Division	Finance Embedded's Share of Division	Creative Embedded's Share of Division
A Agriculture, hunting and forestry	0.81%	0.74%
B Fishing	1.19%	0.52%
C Mining and quarrying	3.91%	2.24%
D Manufacturing	2.71%	4.16%
E Electricity, gas and water supply	4.67%	3.58%
F Construction	1.78%	1.15%
G Wholesale and retail trade; repair of motor vehicles	2.41%	1.39%
H Hotels and restaurants	1.15%	0.62%
I Transport, storage and communication	3.96%	2.44%
J Financial intermediation	Not Applicable	4.60%
K Real estate, renting and business activities	8.39%	4.46%
L Public administration and defence	5.00%	2.25%
M Education	1.14%	2.09%
N Health and social work	1.24%	0.96%
O Other community, social and personal service activities	2.01%	1.43%
P Private households with employed persons	0.17%	0.36%
Q Extra-territorial organisation and bodies	2.76%	4.16%
Total	3.00%	2.43%

Source: Analysis by CCI of custom census 2001 data tables from the Office for National Statistics

One interpretation of this correlation is that most organisations in the knowledge and networked economy of the 21st century need a 'base level' of service inputs – including creative and financial – to function efficiently, and very often they achieve this through direct employment rather than full or partial outsourcing to specialists. The differences between industries' levels of embedded employment could therefore reflect the frequency of use and strategic importance of these services and whether it is more effective for them to import them as embedded staff or as purchased services. Investigating this is a topic for further research.

Part 7: Conclusion: Main findings and implications

The purpose of this research report is to contribute to an improved evidence base for understanding how creative activities may fuel an innovative UK economy. The Creative Trident methodology offers a robust method for identifying all the components of creative employment: creative occupations within the creative industries, creative occupations in the rest of the economy, and non-creative (or support) occupations in the creative industries.

Census data have been used to construct the tables required to estimate the Creative Trident in the UK, supplemented by employment and earnings data from the annual Labour Force Survey. The three aspects of the Trident (creative employment, creative incomes and the whole-economy distribution) have been estimated for the three most recent UK census years (2001, 1991 and 1981), providing a view of changing activity in the creative economy.

The report arguably provides the most refined and robust picture of creative employment underpinning the creative economy in the UK, and relates its research findings to previous mapping work (particularly that of the DCMS).

7.1 Main findings

Finding 1: The creative economy accounts for over 7 per cent of UK employment, broadly consistent with the official estimates
The report shows that at the time of the 2001 census, creative employment accounted for 7.1 per cent of UK jobs, a very similar level to the DCMS Economic Estimates for the same period using different methodology, definition and datasets.

Finding 2: Creative employment has grown strongly over the long run, but has slowed down significantly in recent years
In addition, investigation of census data back to 1981 shows that UK creative employment grew at an annualised rate by 3.8 per cent between 1981 and 2001, compared with 0.8 per cent for the broader UK economy over the same period. However, growth seems to have slowed to 1.0 per cent per year between 2001 and 2006, just below the UK workforce annual rate of 1.2 per cent for the same period.

Finding 3: Average creative incomes are higher than in the economy as a whole, but have recently been growing more slowly
Creative incomes are on average approximately 37 per cent higher than in the UK economy as a whole in 2006, but had been growing at the slower rate of 2.5 per cent per annum since 2001, compared with 3.5 per cent for the total workforce.

Finding 4: There are more creatives working outside the creative industries than inside them
Compared with other economic activities, and consistent with other research commissioned by NESTA, creative employment occurs disproportionately outside the creative industries themselves, with 35 per cent of the total creative workforce (defined as specialist plus support plus embedded workers) embedded in non-creative sectors. A strong implication is that policymakers should recognise the limitations of using industry-based approaches alone to supporting the creative economy.

Finding 5: Creative workers are as embedded in the wider economy as financial services professionals
The 35 per cent of the total creative workforce that is embedded in non-creative sectors is similar to the 39 per cent of total UK financial services employment embedded in non-financial service industries at the time of the 2001 census.

Finding 6: Improvements in the availability of employment data are required to increase the robustness of the creative employment evidence base
Effective, evidence-based policymaking requires that greater attention be given to the frequency and coverage of official data sources, to data availability (to encourage exploratory research into employment characteristics) and to measurement issues (as emphasised by the DCMS's Creative Economy Programme), as well as to the policy implications of a focus on the role of creative activities across the economy as whole.

Our findings regarding the embedded nature of creative activities across the UK economy raise the possibility that the creative sector is significantly more involved in the wider innovation system than has been recognised to date. One possibility is that creative workers employed in the creative industries act as a conduit for knowledge and new ideas initiated in the creative industries. Investigating these channels is a priority for research, as it may have major implications for innovation policy, which has traditionally been focused on science and technology.

7.2 Implications: Improvement of data

Notwithstanding the groundbreaking quality of the DCMS Mapping Documents and the consistent value and timeliness of the DCMS Economic Estimates series, creative economy researchers in the UK face substantial challenges in having ready access to appropriate data. CCI's experience with obtaining, processing and analysing the datasets of the UK, NZ, Australia and the USA has highlighted a number of factors that can enhance or hinder a country's creative economy research capacity:

- data coverage and timeliness;
- levels of resolution and dimensions; and
- accessibility and consistency.

7.2.1 Data coverage and timeliness

Up-to-date population census and business register data provide the most accurate snapshot of the creative economy; but the ten-year interval between national censuses means that population data are unlikely to be current – a fundamental problem for researchers working in this field. Labour Force Survey data from a relatively small sample base, while timely, are no substitute for census data, as they do not facilitate multi-dimensional analysis; nor can they provide the accuracy at fine levels of classification that is required for most creative segment and creative sector analysis. Comparing the 2001 census data with the equivalent Labour Force Survey data shows a substantial difference in many of the relevant, most detailed industry classifications.

Table 29: Comparison of the number of industry classifications in use in Australia, UK and USA

Region	Year	Number of relevant Creative Industry classifications used with data	Number of detailed Industry classifications across the whole economy
USA	2006 OES	18	295
Australia	2001 Census	28	614
	2006 Census	33	716
UK	2001 Census	11	173
	2006 LFS	18	467

Table 30: Comparison of the number of occupation classifications in use within Australia, UK and USA.

Region	Year	Number of relevant Creative Industry classifications in use	Number of detailed occupation classifications across the whole economy
USA	2006 OES	54	821
Australia	2001 Census	89	1315
	2006 Census	105	1334
UK	2001 Census	26	354
	2006 LFS	26	354

7.2.2 Data classifications: resolution and dimensions

Researchers in the UK have approximately half the industry classification resolution of their colleagues in the USA, Australia and New Zealand.

In the occupation dimension, UK researchers fare even worse, with less than half the level of classification resolution available in the USA, and less than a third of the Australian and New Zealand levels.

These classification constraints inevitably flow through to the level of detail within the datasets available to researchers, and limit their ability to produce more robust estimates. Without considering the number of additional records involved in providing the mean income data, researchers in the UK have, at best, access to a third of the employment data records available to researchers in Australia and the USA.[44] The preferred Australian dataset used for Creative Trident analysis at the national level has three dimensions – the count of employment within 16 income bands, 716 industries and 1,334 occupations. After removing 12,954,480 null records, this dataset contained 417,536 records of detailed data. There is no equivalent dataset available in the UK.

7.2.3 Dimensionality

Full resolution, multi-dimensional employment datasets need to be available for researchers to process, link with their other datasets and to explore in the course of their research. A single dimension (e.g. industry only) or summary cross-tabulated two-dimensional data does not support sufficiently robust analysis.

7.2.4 Accessibility and consistency

Research data, such as employment, should be as 'analysis friendly' as possible, especially so for official statistics. The more difficult the data are to obtain, the harder they will be to process for analysis.

7.2.5 Implications of the UK Creative Trident mapping for data quality

In applying a methodology first developed for Australian data, we have been able to take a fresh perspective on data quality as it relates to the UK's creative employment. The study has highlighted an opportunity for the DCMS to work with the Office for National Statistics to improve relevant datasets over the medium to long term. Priorities include:

Classifications

- Increase the resolution of UK occupation and industry classifications by extending the number of digits while maintaining compliance with EU and international requirements.

- Reprocess and recode the UK 2001 census data at consistently higher resolutions of occupation (six-digit) and industry (five-digit) classifications. At the very least, recode into finer classifications all returns in which a single industry classification has over 50,000 people employed.

- Implement a policy to release research data at a common level of classification and detail – that is, not mixing four- and five-digit detail along with subtotal and total data within a given dimension.

44. For 2001 UK Census data there were 61,242 theoretical cells in the 173 industry by 354 occupation matrix with 44,402 cells containing data. In the US 2006 OES there were 242,195 cells in the 295 by 821 matrix with 45,275 cells containing data. In the Australian 2006 Census data set there were 955,144 cells in the 716 by 1,334 matrix with 247,220 cells containing records.

Data collection

- Increase the sample size of the LFS substantially to increase its accuracy and to allow for the release of full-resolution 'occupation within industry' employment data.

- Use the LFS to collect the information that is deemed to be equivalent to personal income details for the self-employed.

- Move to conduct either an employment/population census or a significantly expanded Labour Force Survey every five years, using the full resolution of employment classifications and collecting personal income information.

Fostering a 'culture of metrics'

The shift to evidence-based policy would benefit from the development of an even stronger metrics culture. This would be facilitated by:

- Making the source employment and industry performance data available online for researchers to download. While reports provide analysis and stimulate discussions, they do not remove the barriers faced by other researchers attempting to replicate, extend or challenge the findings. At the very least, the source data for all official reports such as the DCMS Economic Estimates should be available for others to build on and challenge (all the data used in this analysis will be posted on NESTA's website).

- Making multi-dimensional census and LFS employment data easier to access and analyse via direct download and through an online analytical service/statistics repository.

7.3 Creative industries articulated into innovation policy

This report supports a shift in focus for policy from creative outputs (the creative industries as a specific sector) to creative occupations as inputs into the whole economy, and creative outputs as intermediate inputs into other sectors. As such, it complements other research commissioned by NESTA as part of its Arts and Innovation research programme. This idea of creativity as an economic 'enabler' arguably has parallels with the way financial activities and information and communication technologies have been shown to be broad enablers of economic growth in the past. This may facilitate a stronger focus on innovation systems which support the development of the creative economy.

Our findings regarding the embedding of creative activities across the economy raise the possibility of cross-industry linkages and 'technology transfer' due to creative workers, and mean that the creative sector may be significantly more involved in the innovation system of national and regional economies than has been recognised before. This may have important implications for innovation policy which has traditionally been exclusively associated with the science- and technology-based industries.

Appendix 1: Selected creative occupations and industries: Census and LFS

Table 31: Core creative industries selected from those used in the 2001 census.

Segment	Industry
Advertising and Marketing	744 Advertising
Architecture, Design & Visual Arts	362 Manufacture of jewellery and related articles
	74201 Architectural Services (disaggregated from the records of '742 Architectural and engineering activities and related technical consultancy')
Film, TV, Radio and Photography	921 Motion picture and video activities
	922 Radio and television activities
Music & Performing Arts	920 Recreational, cultural and sporting activities n.o.s.
	923 Other entertainment activities
Publishing	221 Publishing
	924 News agencies
	925 Library, archives, museums and other cultural activities
Software, Computer Games & Electronic Publishing	7220 Computer Software consultancy (disaggregated from the records of '72 Computer and related activities')

Table 32: Core creative industries selected from those used in the 1981 and 1991 censuses.

Segment	Industry
Advertising and Marketing	8380 Advertising
Architecture, Design & Visual Arts	4910 Jewellery and coins
Film, TV, Radio and Photography	9711 Film production, distribution and exhibition
	9741 Radio and television services, theatres, etc.
Music & Performing Arts	3452 Gramophone records and pre-recorded tapes
	9760 Authors, music composers and other own account artists not elsewhere specified
Publishing	4751 Printing and publishing of newspapers
	4752 Printing and publishing of periodicals
	4753 Printing and publishing of books
	9770 Libraries, museums, art galleries, etc.
Software, Computer Games & Electronic Publishing	8394 Computer services

Table 33: Core creative occupations selected from those used in the 2001 census.

Segment	Occupation
Advertising and Marketing	1134 Advertising and public relations managers
	3543 Marketing associate professionals
Architecture, Design & Visual Arts	2431 Architects
	2432 Town planners
	3121 Architectural technologists and town planning technicians
	3122 Draughtspersons
	3411 Artists
	3421 Graphic designers
	3422 Product, clothing and related designers
	5491 Glass and ceramics makers, decorators and finishers
	5492 Furniture makers, other craft woodworkers
	5495 Goldsmiths, silversmiths, precious stone workers
Film, TV, Radio and Photography	3416 Arts officers, producers and directors
	3432 Broadcasting associate professionals
	3434 Photographers and audio-visual equipment operators
Music & Performing Arts	3413 Actors, entertainers
	3414 Dancers and choreographers
	3415 Musicians
Publishing	2451 Librarians
	2452 Archivists and curators
	3412 Authors, writers
	3431 Journalists, newspaper and periodical editors
	4135 Library assistants/clerks
	5421 Originators, compositors and print preparers
Software, Computer Games & Electronic Publishing	2131 IT strategy and planning professionals
	2132 Software professionals

Table 34: Core creative occupations selected from those used in the 1991 census.

Segment	Occupation
Advertising and Marketing	123 Advertising and public relations managers
Architecture, Design & Visual Arts	216 Design and development engineers
	260 Architects
	261 Town planners
	303 Architectural and town planning technicians
	310 Draughtspersons
	381 Artists, commercial artists, graphic designers
	382 Industrial designers
	383 Clothing designers
	518 Goldsmiths, silversmiths, precious stone workers
	590 Glass product and ceramics makers
	591 Glass product and ceramics finishers and decorators
Film, TV, Radio and Photography	525 Radio, TV and video engineers
	386 Photographers, camera, sound and video equipment operators
Music & Performing Arts	176 Entertainment and sports managers
	385 Musicians
	384 Actors, entertainers, stage managers, producers and directors
Publishing	270 Librarians
	271 Archivists and curators
	380 Authors, writers, journalists
	421 Library assistants/clerks
Software, Computer Games & Electronic Publishing	214 Software engineers
	320 Computer analyst/programmers

Table 35: Core creative occupations selected from those used in the 1981 census.

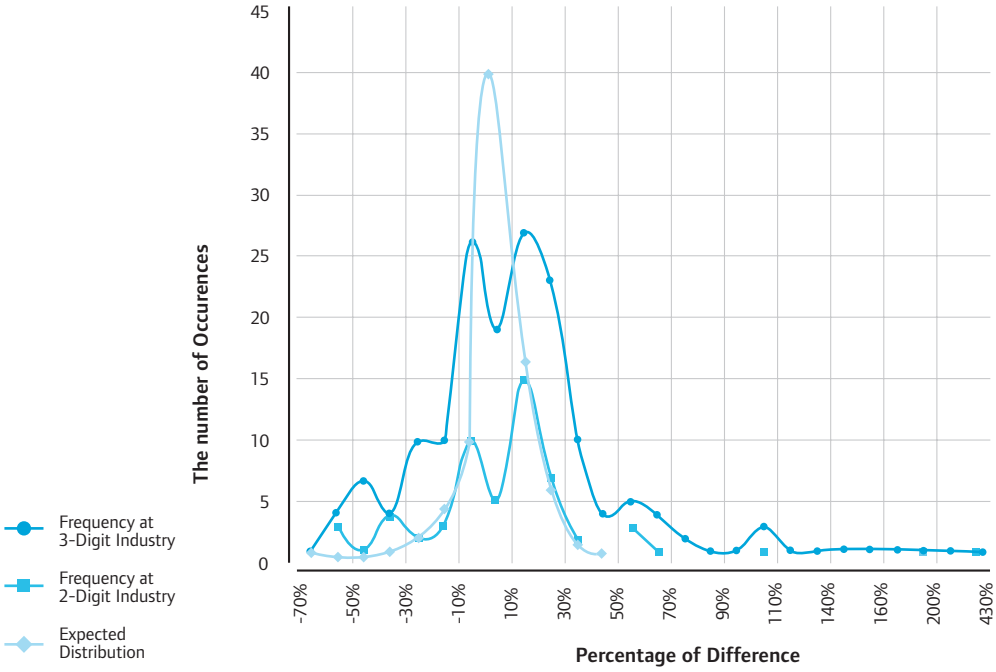
Segment	Occupation
Advertising and Marketing	123 Advertising and public relations managers
Architecture, Design & Visual Arts	216 Design and development engineers
	260 Architects
	303 Architectural and town-planning technicians
	310 Draughtspersons
	381 Artists, commercial artists, graphic designers
	382 Industrial designers
	383 Clothing designers
	518 Goldsmiths, silversmiths, precious stone workers
	590 Glass product and ceramics makers
	591 Glass product and ceramic finishers and decorators
Film, TV, Radio and Photography	386 Photographers, camera, sound and video equipment operators
	525 Radio, TV and video engineers
Music & Performing Arts	176 Entertainment and sports managers
	384 Actors, entertainers, stage managers, producers and directors
	385 Musicians
Publishing	270 Information officers and technical librarians
	271 Archivists and curators
	380 Authors, writers, journalists
Software, Computer Games & Electronic Publishing	214 Computer analyst/programmers

Appendix 2: The alignment between the detailed census and LFS employment data

Figure 2 plots the frequency of the discrepancy between the employment data used from the 2001 census and the LFS. The LFS four-digit industry classifications are aggregated to the closest detailed census classification which may be two- or three-digit.

Figure 2 reveals a substantial difference between two data sources in the numbers of people employed in most of the relevant industry and occupation classifications – in some cases by as much as 20 per cent to 30 per cent, despite the total employment figure showing only a 1 per cent discrepancy.

Figure 2: Frequency of discrepancy between census and LFS employment – industry classifications.

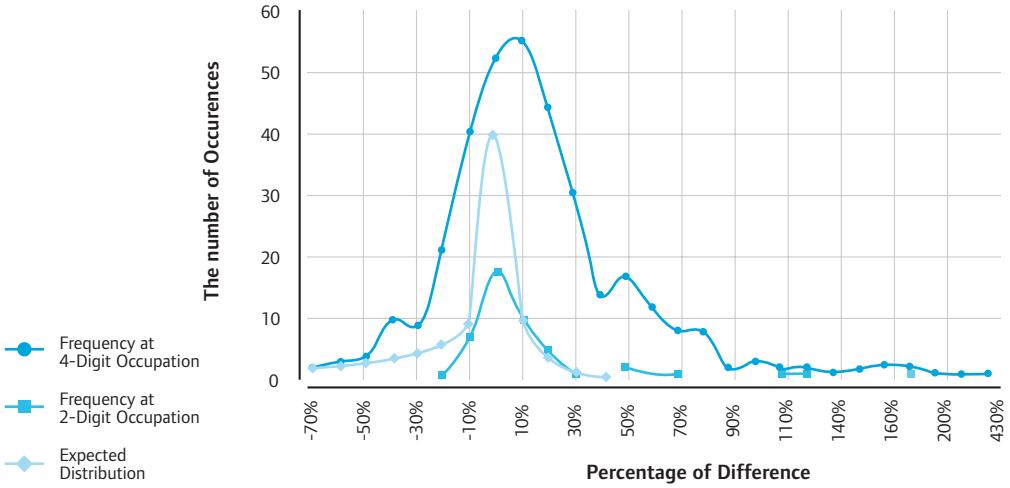


Source: Office for National Statistics 2001 Census of Households and 2001 LFS

Similarly, when employment data are compared on the basis of occupations, there is a significant variation at the four-digit classification level, with over 30 per cent of classifications having a difference exceeding 20 per cent (Figure 3).

Reliably measuring creative employment requires the summing-up of many detailed classifications; and since the LFS data appear to be so much at variance with census data, it would seem likely that the LFS data in its current form is not as accurate as would be hoped, for use as the basis for absolute measurement of creative employment, nor for tracking the subtler shifts over time.

Figure 3: Frequency of discrepancy between census and LFS employment – occupation classifications.



Source: Office for National Statistics 2001 Census of Households and 2001 LFS

Appendix 3: The impact of excluding second jobs from LFS based analyses

Adding second jobs to the employment basis for the calculation of the Creative Employment Trident does little to increase the relative size of the creative economy and at the same time makes interpretation of the results more difficult – it shifts the basis for all calculations from the number of people employed to the number of jobs.

What follows are experimental estimates to determine the impact of second jobs and the difference between a creative workforce Trident and a creative jobs Trident. They should not be interpetated as providing an accurate estimate of the number of creative jobs.

Using main and second job data from the 2006 LFS dataset shows that the creative share would grow from 7.8 per cent of total employment (by definition main job) to a 7.9 per cent share of total jobs.

Overall, the incidence of second jobs in the creative workforce is 5.5 per cent compared with 3.7 per cent for the total UK workforce (Table 36).

Table 36: The number of people with second jobs and main jobs in creative occupations for 2006.

Segment of Occupation	Second Job	Main Job	Ratio
Advertising and Marketing	3,505	179,384	2.0%
Architecture, Design & Visual Arts	13,177	401,065	3.3%
Film, TV, Radio and Photography	9,260	121,918	7.6%
Music & Performing Arts	26,532	67,232	39.5%
Publishing	18,074	211,847	8.5%
Software, Computer Games & Electronic Publishing	7,686	435,450	1.8%
Total Creative Segments	78,234	1,416,896	5.5%
Total All Occupations	1,044,732	28,165,612	3.7%

Source: CCI analysis of custom LFS data from the Office for National Statistics

Table 37: The number of people with second jobs and main jobs in creative segments for 2006.

Segment of Industry	Second Job	Main Job	Ratio
Advertising and Marketing	2,496	91,243	2.7%
Architecture, Visual Arts and Design	9,424	377,033	2.5%
Film, TV, Radio and Photography	8,295	155,149	5.3%
Music and Performing Arts	39,726	187,772	21.2%
Publishing	12,479	237,105	5.3%
Software, Computer Games & Electronic Publishing	7,250	368,072	2.0%
Total Creative Segments	79,670	1,416,374	5.6%
Total All Industries	1,044,732	28,163,940	3.6%

Source: CCI analysis of custom LFS data from the Office for National Statistics

The high ratio of second jobs in Music & Performing Arts occupations (39.5 per cent) is also reflected within Music & Performing Arts industries.

Table 38: The ratio of the number of people with second jobs to those with main jobs in creative occupations and industries for 2006.

Creative Segment	Employment Status	Second to main job ratio 2006	
		Creative occupations	Creative industries
Advertising and Marketing	Employee	2%	3%
	Self-employed	3%	0%
	Total	2%	3%
Architecture, Design & Visual Arts	Employee	4%	3%
	Self-employed	0%	2%
	Total	3%	2%
Film, TV, Radio and Photography	Employee	10%	6%
	Self-employed	4%	4%
	Total	8%	5%
Music & Performing Arts	Employee	174%	47%
	Self-employed	11%	7%
	Total	39%	21%
Publishing	Employee	10%	5%
	Self-employed	6%	8%
	Total	9%	5%
Software, Computer Games & Electronic Publishing	Employee	2%	2%
	Self-employed	2%	3%
	Total	2%	2%
All Creative Segment	Employee	6%	6%
	Self-employed	4%	4%
	Total	6%	6%
UK Workforce	Employee	4%	4%
	Self-employed	4%	4%
	Total	4%	4%

Source: CCI analysis of custom LFS data from the Office for National Statistics

The following table breaks down first and second creative jobs by occupation and industry.

The table reveals the extent of the diversity of employment: for example the Music and Performing Arts Industry is a significant employer, on both a main and second job basis, of design, film and publishing-related professionals.

Table 39: The number of people employed in main and second creative jobs by occupation and industry segments for 2006.

Industry Segment	Job Rank	Occupation Segment						Other	Total All Occupations
		Advertising and Marketing	Architecture, Design & Visual Arts	Film, TV, Radio and Photography	Music & Performing Arts	Publishing	Software, Computer Games & Electronic Publishing		
Advertising and Marketing	Main Job	25,349	9,430	2,557		2,996	650	50,261	91,243
	Second Job							2,496	2,496
Architecture, Visual Arts and Design	Main Job	3,124	97,608			6,439	3,246	266,616	377,033
	Second Job		1,852					7,572	9,424
Film, TV, Radio and Photography	Main Job	1,384	3,862	78,117	5,052	2,431	785	63,518	155,149
	Second Job			4,952				3,343	8,295
Music and Performing Arts	Main Job		34,804	14,540	47,398	14,595	476	75,959	187,772
	Second Job		4,628	1,094	17,928	1,545		14,531	39,726
Publishing	Main Job	6,699	10,813	1,613		91,372	3,175	123,433	237,105
	Second Job					8,600		3,879	12,479
Software, Computer Games & Electronic Publishing	Main Job	2,945	6,753			1,672	180,322	176,380	368,072
	Second Job		743				2,909	3,598	7,250
Other	Main Job	139,883	237,795	25,091	14,782	92,342	246,796	25,990,877	28,163,940
	Second Job	3,956	8,253	3,910	8,731	8,672	4,777	926,763	1,044,732
Total Employed In All Industries	Main Job	179,384	401,065	121,918	67,232	211,847	435,450	26,747,044	28,163,940
	Second Job	3,956	15,476	9,956	26,659	18,817	7,686	962,182	1,044,732

Source: CCI analysis of custom LFS data from the Office for National Statistics (some cells have been subject to suppression).

Conversely, the Software, Computer Games & Electronic Publishing industry employs relatively few individuals on a second job basis. All these estimates are of course subject to possible finite sample biases insofar as the LFS is only a sample-based survey.

Appendix 4: The Disaggregating of 7420 Architecture and Engineering Services in the LFS dataset

The disaggregation of '7420 Architecture and Engineering Services' into '7420/1 Architecture Services' and into an artificial industry '7420/9 Engineering Services' was not trivial, as adjustments had to be made at the detailed level and to each dimension's subtotals to maintain the integrity of the datasets.

In summary it involved taking the employment count within '7420 Architecture and Engineering Services' for each creative occupation (and subtotals) for each year of the LFS dataset.

Not all of the employment in creative occupations is allocated to the disaggregated creative industry '7420/1 Architectural Services'. Some is allocated to '7420/9 Engineering Services' to reflect the fact that some engineering service firms employ graphic artists, designers, programmers and marketeers (Table 40).

Table 40: The allocation of creative occupations across two disaggregated industries.

2006 Year Occupations	Industry of Employment 7420 Architecture and Engineering Services	7420/1 Architecture Services	7420/9 Engineering Services
1134 Advertising and public relations managers	658	605	53
2131 IT strategy and planning professionals	1,504	1,384	120
2132 Software professionals	1,742	1,603	139
2431 Architects	40,005	36,805	3,200
2432 Town planners	6,160	5,667	493
3121 Architectural technologists and town planning technicians	12,142	11,171	971
3122 Draughtspersons	11,977	11,019	958
3421 Graphic designers	17,998	16,558	1,440
3422 Product, clothing and related designers	6,216	5,719	497
3543 Marketing associate professionals	2,282	2,099	183
Occupations with suppressed employment	585	537	48
Sub-total of creative occupations	101,269	93,167	8,102
Sub-total of all other occupations	223,164	75,876	147,288
Total of all occupations within the industry	324,433	169,043	155,390

Source: CCI analysis of custom LFS data from the Office for National Statistics

While this procedure results in no change to total employment in any of the years, it does mean that there is a shift between the modes: in any one year, specialist employment decreases by approximately 10,000 with a balancing increase in embedded employment. The level of support employment falls by around 150,000 each year as this amount is shifted to non-creative employment (Table 41).

Table 41: Disaggregating 7420 Architecture and Engineering Services from 2001 to 2006.

Year	Occupation modes within the Industries	Original employment in 7420 Architecture and Engineering Services	Adjustment made	After disaggregation	
				7420/1 Architecture Services	7420/9 Engineering Services
2001	Specialist	97,604	(7,808)	89,796	7,808
	Support	226,630	(149,576)	77,054	149,576
	Total	324,234	(157,384)	166,850	157,384
2002	Specialist	91,941	(7,355)	84,586	7,355
	Support	230,099	(151,865)	78,234	151,865
	Total	322,040	(159,220)	162,820	159,220
2003	Specialist	97,650	(7,812)	89,838	7,812
	Support	228,641	(150,903)	77,738	150,903
	Total	326,291	(158,715)	167,576	158,715
2004	Specialist	95,725	(7,658)	88,067	7,658
	Support	228,514	(150,819)	77,695	150,819
	Total	324,239	(158,477)	165,762	158,477
2005	Specialist	101,971	(8,158)	93,813	8,158
	Support	235,948	(155,726)	80,222	155,726
	Total	337,919	(163,884)	174,035	163,884
2006	Specialist	101,269	(8,102)	93,167	8,102
	Support	223,164	(147,288)	75,876	147,288
	Total	324,433	(155,390)	169,043	155,390

Source: CCI analysis of custom LFS data from the Office for National Statistics

Appendix 5: The impact of classifications on creative employment measures

In 2006, the Australian Bureau of Statistics adopted new classification schemes for occupations and industries. The direct impact of a more modern classification scheme on creative employment can now be better understood as the 2006 Australian census data was coded twice – under the previous scheme and under the new scheme.

An examination of the number of classifications actually used in the census reveals a significant increase in the number of occupation classifications.

An increase in the number of available classifications increases the ability to discriminate, but also generally results in an increase in the level of a segment's measurable employment. The main benefactor of this classification change is the Software and Digital Content segment, which expanded from two to seven industry classifications and from four to 19 occupation classifications. Unsurprisingly, its employment increased 16 per cent in total.

Table 42: The number of classifications available in the 2006 Australian census for measuring the creative segments.

Segment	Industry		Occupation	
	ANZSIC93	ANZSIC06	ASCO v2	ANZSCO
Advertising and Marketing	2	2	5	5
Architecture, Design and Visual Arts	8	7	26	27
Film, TV and Radio	7	6	21	21
Music and Performing Arts	7	6	16	20
Publishing	7	6	13	13
Software and Digital Content	2	7	4	19
Grand Total	33	34	85	105

Source: CCI analysis

Table 43: The impact of the change in classifications on the measurement of creative employment in Australia.

Segment	Industry		Occupation		Creative Employment		
	ANZSIC93	ANZSIC06	ASCO v2	ANZSCO	Older	Modern	Impact
Advertising and Marketing	26,890	27,649	35,717	41,821	54,429	59,711	9.7%
Architecture, Design and Visual Arts	72,235	80,993	101,915	93,340	128,138	125,797	-1.8%
Film, TV and Radio	30,184	29,066	23,340	21,198	35,962	33,239	-7.6%
Music and Performing Arts	17,198	9,164	19,323	23,984	28,156	24,685	-12.3%
Publishing	58,578	48,806	45,852	45,087	81,405	73,706	-9.5%
Software and Digital Content	101,871	119,498	78,215	87,958	146,340	169,577	15.9%
Grand Total	306,956	315,176	304,362	313,388	474,430	486,715	2.6%

Source: Analysis by CCI of Australian Bureau of Statistics 2006 Census of Population and Housing

Appendix 6: Top ten occupations employed in each creative industry

The following table is an example of the range of tables used to determine the relevance of industry classifications to the Creative Trident. The table is generated from the two-dimensional 2001 census matrix containing the number of people employed within each occupation in each industry.

Table 44: The top ten occupations within each candidate creative industry using 2001census classifications and data.

Selected Census Industry	Top ten occupations within the Industry	Employed 2001	Share of Industry
221 Publishing	Total of all Occupations within the industry	177,592	
	3431 Journalists, newspaper and periodical editors	35,427	19.9%
	1121 Production, works and maintenance managers	15,131	8.5%
	3542 Sales representatives	10,642	6.0%
	1132 Marketing and sales managers	9,298	5.2%
	4150 General office assistants/clerks	6,818	3.8%
	1239 Managers and proprietors in other services n.e.c.	5,985	3.4%
	3412 Authors, writers	5,228	2.9%
	4215 Personal assistants and other secretaries	4,103	2.3%
	4122 Accounts and wages clerks, book-keepers, other financial clerks	3,957	2.2%
	3421 Graphic Designers	3,945	2.2%

Selected Census Industry	Top ten occupations within the Industry	Employed 2001	Share of Industry
362 Manufacture of jewellery and related articles	Total of all Occupations within the industry	12,989	
	5495 Goldsmiths, silversmiths, precious stone workers	2,968	22.9%
	1121 Production, works and maintenance managers	1,011	7.8%
	8125 Metal working machine operatives	754	5.8%
	7111 Sales and retail assistants	620	4.8%
	3422 Product, clothing and related designers	399	3.1%
	4150 General office assistants/clerks	383	2.9%
	5224 Precision instrument makers and repairers	330	2.5%
	9139 Labourers in process and plant operations n.e.c.	262	2.0%
	4122 Accounts and wages clerks, book-keepers, other financial clerks	259	2.0%
	8132 Assemblers (vehicles and metal goods)	255	2.0%
7220 Computer Software consultancy (After disaggregation from 72 Computer Activities)	Total of all Occupations within the industry	374,036	
	2132 Software professionals	89,366	23.9%
	2131 IT strategy and planning professionals	66,888	17.9%
	1136 Information and communication technology managers	36,099	9.7%
	1132 Marketing and sales managers	16,545	4.4%
	3131 IT operations technicians	10,031	2.7%
	5245 Computer engineers, installation and maintenance	9,485	2.5%
	3421 Graphic designers	8,405	2.2%
	1121 Production, works and maintenance managers	8,275	2.2%
	4150 General office assistants/clerks	8,102	2.2%
	3542 Sales representatives	6,386	1.7%
74201 Architectural activities and related technical consultancy	Total of all Occupations within the industry	168,085	
	2431 Architects	29,126	17.3%
	4215 Personal assistants and other secretaries	19,472	11.6%
	3421 Graphic designers	14,701	8.7%
	3121 Architectural technologists and town planning technicians	12,508	7.4%
	2126 Design and development engineers	11,357	6.8%
	4150 General office assistants/clerks	11,243	6.7%
	3122 Draughtspersons	9,304	5.5%
	1132 Marketing and sales managers	6,499	3.9%
	3422 Product, clothing and related designers	5,417	3.2%
	2432 Town planners	4,603	2.7%

Selected Census Industry	Top ten occupations within the Industry	Employed 2001	Share of Industry
744 Advertising	Total of all Occupations within the industry	101,385	
	1134 Advertising and public relations managers	20,563	20.3%
	3543 Marketing associate professionals	9,920	9.8%
	3421 Graphic designers	6,901	6.8%
	1132 Marketing and sales managers	5,229	5.2%
	3542 Sales representatives	4,426	4.4%
	4150 General office assistants/clerks	3,178	3.1%
	4215 Personal assistants and other secretaries	3,178	3.1%
	4122 Accounts and wages clerks, book-keepers, other financial clerks	2,987	2.9%
	3416 Arts officers, producers and directors	2,495	2.5%
	3412 Authors, writers	1,919	1.9%
920 Recreational, cultural and sporting activities n.o.s.	Total of all Occupations within the industry	1,239	
	4150 General office assistants/clerks	61	4.9%
	1225 Leisure and sports managers	53	4.3%
	4122 Accounts and wages clerks, book-keepers, other financial clerks	52	4.2%
	9233 Cleaners, domestics	45	3.6%
	6211 Sports and leisure assistants	44	3.6%
	4216 Receptionists	43	3.5%
	3411 Artists	41	3.3%
	1132 Marketing and sales managers	36	2.9%
	4215 Personal assistants and other secretaries	36	2.9%
	1239 Managers and proprietors in other services n.e.c.	31	2.5%
921 Motion picture and video activities	Total of all Occupations within the industry	34,842	
	1225 Leisure and sports managers	3,622	10.4%
	9226 Leisure and theme park attendants	3,040	8.7%
	3434 Photographers and audio-visual equipment operators	3,004	8.6%
	3416 Arts officers, producers and directors	2,405	6.9%
	3432 Broadcasting associate professionals	1,473	4.2%
	7111 Sales and retail assistants	1,144	3.3%
	7212 Customer care occupations	1,050	3.0%
	9229 Elementary personal services occupations n.e.c.	845	2.4%
	9219 Elementary office occupations n.e.c.	773	2.2%
	3411 Artists	679	1.9%

Selected Census Industry	Top ten occupations within the Industry	Employed 2001	Share of Industry
922 Radio and television activities	Total of all Occupations within the industry	110,648	
	3432 Broadcasting associate professionals	29,020	26.2%
	3434 Photographers and audio-visual equipment operators	6,070	5.5%
	1225 Leisure and sports managers	5,495	5.0%
	3431 Journalists, newspaper and periodical editors	3,621	3.3%
	7212 Customer care occupations	3,297	3.0%
	2329 Researchers n.e.c.	2,927	2.6%
	4215 Personal assistants and other secretaries	2,584	2.3%
	1132 Marketing and sales managers	2,444	2.2%
	4150 General office assistants/clerks	2,340	2.1%
	4122 Accounts and wages clerks, book-keepers, other financial clerks	2,134	1.9%
923 Other entertainment activities	Total of all Occupations within the industry	139,023	
	3413 Actors, entertainers	19,818	14.3%
	3415 Musicians	14,167	10.2%
	3412 Authors, writers	7,359	5.3%
	2319 Teaching professionals n.e.c.	5,679	4.1%
	3416 Arts officers, producers and directors	5,598	4.0%
	3411 Artists	4,914	3.5%
	9226 Leisure and theme park attendants	3,906	2.8%
	3434 Photographers and audio-visual equipment operators	3,508	2.5%
	1225 Leisure and sports managers	3,478	2.5%
	4150 General office assistants/clerks	3,078	2.2%
924 News agency activities	Total of all Occupations within the industry	17,841	
	3431 Journalists, newspaper and periodical editors	7,704	43.2%
	3434 Photographers and audio-visual equipment operators	645	3.6%
	1132 Marketing and sales managers	510	2.9%
	3412 Authors, writers	487	2.7%
	4150 General office assistants/clerks	358	2.0%
	2132 Software professionals	336	1.9%
	3542 Sales representatives	322	1.8%
	4135 Library assistants/clerks	320	1.8%
	4215 Personal assistants and other secretaries	285	1.6%
	3432 Broadcasting associate professionals	274	1.5%

Selected Census Industry	Top ten occupations within the Industry	Employed 2001	Share of Industry
925 Library, archives, museums and other cultural activities	Total of all Occupations within the industry	105,131	
	4135 Library assistants/clerks	22,642	21.5%
	2451 Librarians	8,057	7.7%
	4150 General office assistants/clerks	5,010	4.8%
	2452 Archivists and curators	4,232	4.0%
	1239 Managers and proprietors in other services n.e.c.	3,797	3.6%
	9249 Elementary security occupations n.e.c.	3,184	3.0%
	6211 Sports and leisure assistants	2,325	2.2%
	9233 Cleaners, domestics	2,189	2.1%
	7111 Sales and retail assistants	2,118	2.0%
	4215 Personal assistants and other secretaries	1,599	1.5%

Source: Office for National Statistics 2001 Census of Households

Appendix 7: Top ten industries of employment of creative occupations

The following table is used to determine the relevance of occupation classifications to the Creative Trident. The table was generated from the two dimensional 2001 Census matrix containing the count of the people employed within each occupation within each industry. This level of analysis cannot be conducted with the same level of confidence on LFS datasets because the matrices contain too many suppressed cells.

Table 45: The top ten industries for each candidate creative occupation using 2001 census classifications and data.

Creative	Top ten Industries in which they are employed	Employed	Share
2132 Software professionals	Total	259,135	
	7220 Computer Software consultancy	89,366	34.5%
	65 Financial intermediation, except insurance and pension funding	20,785	8.0%
	642 Telecommunications	17,052	6.6%
	7260 Other computer activities	9,930	3.8%
	66 Insurance and pension funding, except compulsory social security	8,548	3.3%
	52 Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	7,506	2.9%
	741 Legal, accounting, book keeping and auditing activities; tax consultancy; market research and public opinion polling; business and management consultancy; holdings	7,073	2.7%
	751 Administration of the State and the economic and social policy of the community	5,629	2.2%
	51 Wholesale trade and commission trade, except of motor vehicles and motorcycles	5,055	2.0%
	353 Manufacture of aircraft and spacecraft	3,831	1.5%

Creative	Top ten Industries in which they are employed	Employed	Share
2131 IT strategy and planning professionals	Total	117,384	
	7220 Computer Software consultancy	66,888	57.0%
	7260 Other computer activities	7,432	6.3%
	741 Legal, accounting, book keeping and auditing activities; tax consultancy; market research and public opinion polling; business and management consultancy; holdings	6,276	5.3%
	65 Financial intermediation, except insurance and pension funding	5,677	4.8%
	642 Telecommunications	5,212	4.4%
	66 Insurance and pension funding, except compulsory social security	2,092	1.8%
	52 Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	1,881	1.6%
	74209 Engineering activities and related technical consultancy	1,870	1.6%
	51 Wholesale trade and commission trade, except of motor vehicles and motorcycles	1,625	1.4%
	30 Manufacture of office machinery and computers	1,415	1.2%
3543 Marketing associate professionals	Total	88,569	
	741 Legal, accounting, etc. For further details see above	12,687	14.3%
	744 Advertising	9,920	11.2%
	853 Social work activities	5,062	5.7%
	51 Wholesale trade and commission trade, except of motor vehicles and motorcycles	3,828	4.3%
	52 Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	3,799	4.3%
	221 Publishing	3,778	4.3%
	7220 Computer Software consultancy	3,709	4.2%
	65 Financial intermediation, except insurance and pension funding	2,801	3.2%
	751 Administration of the State and the economic and social policy of the community	2,664	3.0%
	748 Miscellaneous business activities not elsewhere classified	1,981	2.2%
3421 Graphic designers	Total	79,854	
	74201 Architectural activities and related technical consultancy	14,701	18.4%
	222 Printing and service activities related to printing	10,402	13.0%
	7220 Computer Software consultancy	8,405	10.5%
	744 Advertising	6,901	8.6%
	748 Miscellaneous business activities not elsewhere classified	4,487	5.6%
	221 Publishing	3,945	4.9%
	52 Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	2,156	2.7%
	741 Legal, accounting, etc. For further details see above	2,016	2.5%
	51 Wholesale trade and commission trade, except of motor vehicles and motorcycles	1,913	2.4%
	923 Other entertainment activities	1,658	2.1%

Creative	Top ten Industries in which they are employed	Employed	Share
3431 Journalists, newspaper and periodical editors	Total	64,667	
	221 Publishing	35,427	54.8%
	924 News agency activities	7,704	11.9%
	922 Radio and television activities	3,621	5.6%
	222 Printing and service activities related to printing	1,333	2.1%
	7220 Computer Software consultancy	1,274	2.0%
	741 Legal, accounting, book keeping and auditing activities; tax consultancy; market research and public opinion polling; business and management consultancy; holdings	1,263	2.0%
	748 Miscellaneous business activities not elsewhere classified	1,247	1.9%
	923 Other entertainment activities	1,176	1.8%
	91 Activities of membership organisations	781	1.2%
	751 Administration of the State and the economic and social policy of the community	756	1.2%
3422 Product, clothing and related designers	Total	49,604	
	748 Miscellaneous business activities not elsewhere classified	11,285	22.8%
	52 Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	5,463	11.0%
	74201 Architectural activities and related technical consultancy	5,417	10.9%
	221 Publishing	3,834	7.7%
	17 Manufacture of textiles	2,020	4.1%
	51 Wholesale trade and commission trade, except of motor vehicles and motorcycles	1,997	4.0%
	18 Manufacture of wearing apparel; dressing and dyeing of fur	1,980	4.0%
	361 Manufacture of furniture	1,590	3.2%
	45 Construction	1,491	3.0%
	922 Radio and television activities	1,376	2.8%
3434 Photographers and audio-visual equipment operators	Total	45,130	
	748 Miscellaneous business activities not elsewhere classified	13,869	30.7%
	922 Radio and television activities	6,070	13.5%
	923 Other entertainment activities	3,508	7.8%
	921 Motion picture and video activities	3,004	6.7%
	221 Publishing	1,649	3.7%
	803 Higher Education	1,415	3.1%
	52 Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	1,343	3.0%
	74201 Architectural activities and related technical consultancy	818	1.8%
	752 Provision of services to the community as a whole	799	1.8%
	71 Renting of macinery and equipment without operator and of personal and household goods	728	1.6%

Creative	Top ten Industries in which they are employed	Employed	Share
3412 Authors, writers	Total	44,142	
	923 Other entertainment activities	7,359	16.7%
	748 Miscellaneous business activities not elsewhere classified	6,506	14.7%
	221 Publishing	5,228	11.8%
	7220 Computer Software consultancy	2,101	4.8%
	744 Advertising	1,919	4.3%
	741 Legal, accounting, book keeping and auditing activities; tax consultancy; market research and public opinion polling; business and management consultancy; holdings	1,578	3.6%
	922 Radio and television activities	1,449	3.3%
	851 Human Health Activities	1,342	3.0%
	853 Social work activities	1,063	2.4%
	751 Administration of the State and the economic and social policy of the community	1,006	2.3%
5492 Furniture makers, other craft woodworkers	Total	43,521	
	361 Manufacture of furniture	23,788	54.7%
	52 Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	4,802	11.0%
	45 Construction	3,528	8.1%
	20 Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	2,171	5.0%
	51 Wholesale trade and commission trade, except of motor vehicles and motorcycles	1,105	2.5%
	748 Miscellaneous business activities not elsewhere classified	530	1.2%
	366 Miscellaneous manufacturing not elsewhere classified	438	1.0%
	360 Manufacturing n.o.s.	388	0.9%
	28 Manufacture of fabricated metal products, except machinery and equipment	333	0.8%
	502 Maintenance and repair of motor vehicles	326	0.7%
3432 Broadcasting associate professionals	Total	40,308	
	922 Radio and television activities	29,020	72.0%
	921 Motion picture and video activities	1,473	3.7%
	744 Advertising	618	1.5%
	222 Printing and service activities related to printing	607	1.5%
	923 Other entertainment activities	603	1.5%
	748 Miscellaneous business activities not elsewhere classified	444	1.1%
	7220 Computer software consultancy	392	1.0%
	32 Manufacture of radio, television and communication equipment and apparatus	354	0.9%
	642 Telecommunications	334	0.8%
	221 Publishing	320	0.8%

Creative	Top ten Industries in which they are employed	Employed	Share
2431 Architects	Total	39,708	
	74201 Architectural activities and related technical consultancy	29,126	73.4%
	7220 Computer software consultancy	1,454	3.7%
	45 Construction	1,217	3.1%
	741 Legal, accounting, book keeping and auditing activities; tax consultancy; market research and public opinion polling; business and management consultancy; holdings	935	2.4%
	751 Administration of the State and the economic and social policy of the community	799	2.0%
	70 Real Estate activities	740	1.9%
	014 Agricultural and animal husbandry service activities, except veterinary activities	593	1.5%
	748 Miscellaneous business activities not elsewhere classified	419	1.1%
	851 Human Health Activities	354	0.9%
	65 Financial intermediation, except insurance and pension funding	330	0.8%
4135 Library assistants/clerks	Total	39,293	
	925 Library, archives, museums and other cultural activities	22,642	57.6%
	803 Higher Education	6,084	15.5%
	751 Administration of the State and the economic and social policy of the community	2,140	5.4%
	802 Secondary Education	1,555	4.0%
	851 Human Health Activities	945	2.4%
	926 Sporting activities	582	1.5%
	853 Social work activities	546	1.4%
	741 Legal, accounting, etc. For further details see above.	393	1.0%
	801 Primary education	357	0.9%
	800 Education n.o.s.	334	0.9%
1134 Advertising and public relations managers	Total	37,399	
	744 Advertising	20,563	55.0%
	741 Legal, accounting, etc. For further details see above.	2,455	6.6%
	221 Publishing	2,173	5.8%
	853 Social work activities	1,657	4.4%
	748 Miscellaneous business activities not elsewhere classified	734	2.0%
	7220 Computer Software consultancy	721	1.9%
	751 Administration of the State and the economic and social policy of the community	711	1.9%
	52 Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	577	1.5%
	922 Radio and television activities	438	1.2%
	91 Activities of membership organisations	409	1.1%

Creative	Top ten Industries in which they are employed	Employed	Share
3122 Draughtspersons	Total	37,161	
	74201 Architectural activities and related technical consultancy	9,304	25.0%
	45 Construction	4,152	11.2%
	28 Manufacture of fabricated metal products, except machinery and equipment	2,676	7.2%
	31 Manufacture of electrical machinery and apparatus not elsewhere classified	1,043	2.8%
	351 Building and repairing of ships and boats	974	2.6%
	292 Manufacture of other general purpose machinery	965	2.6%
	353 Manufacture of aircraft and spacecraft	819	2.2%
	748 Miscellaneous business activities not elsewhere classified	730	2.0%
	752 Provision of services to the community as a whole	715	1.9%
	51 Wholesale trade and commission trade, except of motor vehicles and motorcycles	700	1.9%
3413 Actors, entertainers	Total	33,137	
	923 Other entertainment activities	19,818	59.8%
	922 Radio and television activities	1,765	5.3%
	554 Bars	1,122	3.4%
	748 Miscellaneous business activities not elsewhere classified	981	3.0%
	921 Motion picture and video activities	573	1.7%
	552 Camping sites and other provision of short stay accommodation	565	1.7%
	52 Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	478	1.4%
	926 Sporting activities	438	1.3%
	851 Human Health Activities	397	1.2%
	802 Secondary Education	367	1.1%
3415 Musicians	Total	26,872	
	923 Other entertainment activities	14,167	52.7%
	802 Secondary Education	1,612	6.0%
	752 Provision of services to the community as a whole	924	3.4%
	922 Radio and television activities	816	3.0%
	91 Activities of membership organisations	806	3.0%
	851 Human Health Activities	489	1.8%
	748 Miscellaneous business activities not elsewhere classified	482	1.8%
	800 Education n.o.s.	435	1.6%
	801 Primary education	405	1.5%
	804 Adult and other education	398	1.5%

Creative	Top ten Industries in which they are employed	Employed	Share
2451 Librarians	Total	24,782	
	925 Library, archives, museums and other cultural activities	8,057	32.5%
	803 Higher Education	4,267	17.2%
	802 Secondary Education	3,570	14.4%
	751 Administration of the State and the economic and social policy of the community	1,227	5.0%
	741 Legal, accounting, book keeping and auditing activities; tax consultancy; market research and public opinion polling; business and management consultancy; holdings	654	2.6%
	851 Human Health Activities	638	2.6%
	922 Radio and television activities	558	2.3%
	801 Primary education	516	2.1%
	752 Provision of services to the community as a whole	457	1.8%
	91 Activities of membership organisations	406	1.6%
3411 Artists	Total	24,007	
	923 Other entertainment activities	4,914	20.5%
	748 Miscellaneous business activities not elsewhere classified	1,494	6.2%
	851 Human Health Activities	1,138	4.7%
	74201 Architectural activities and related technical consultancy	1,108	4.6%
	221 Publishing	1,074	4.5%
	52 Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	974	4.1%
	7220 Computer Software consultancy	953	4.0%
	222 Printing and service activities related to printing	702	2.9%
	922 Radio and television activities	685	2.9%
	921 Motion picture and video activities	679	2.8%
5491 Glass and ceramics makers, decorators and finishers	Total	23,135	
	262 Manufacture of non-refractory ceramic goods other than for construction purposes; manufacture of refractory ceramic products	9,506	41.1%
	261 Manufacture of glass and glass products	4,681	20.2%
	264 Manufacture of bricks, tiles and construction products, in baked clay	1,026	4.4%
	334 Manufacture of optical instruments and photographic equipment	827	3.6%
	45 Construction	736	3.2%
	52 Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	624	2.7%
	51 Wholesale trade and commission trade, except of motor vehicles and motorcycles	480	2.1%
	263 Manufacture of ceramic tiles and flags	297	1.3%
	923 Other entertainment activities	268	1.2%
	360 Manufacturing n.o.s.	260	1.1%

Creative	Top ten Industries in which they are employed	Employed	Share
3416 Arts officers, producers and directors	Total	21,653	
	923 Other entertainment activities	5,598	25.9%
	744 Advertising	2,495	11.5%
	921 Motion picture and video activities	2,405	11.1%
	748 Miscellaneous business activities not elsewhere classified	1,503	6.9%
	922 Radio and television activities	1,339	6.2%
	221 Publishing	868	4.0%
	222 Printing and service activities related to printing	770	3.6%
	74201 Architectural activities and related technical consultancy	587	2.7%
	751 Administration of the State and the economic and social policy of the community	516	2.4%
	741 Legal, accounting, book keeping and auditing activities; tax consultancy; market research and public opinion polling; business and management consultancy; holdings	429	2.0%
3121 Architectural technologists and town planning technicians	Total	16,328	
	74201 Architectural activities and related technical consultancy	12,508	76.6%
	751 Administration of the State and the economic and social policy of the community	912	5.6%
	45 Construction	848	5.2%
	70 Real Estate activities	506	3.1%
	748 Miscellaneous business activities not elsewhere classified	144	0.9%
	741 Legal, accounting, book keeping and auditing activities; tax consultancy; market research and public opinion polling; business and management consultancy; holdings	104	0.6%
	65 Financial intermediation, except insurance and pension funding	73	0.4%
	853 Social work activities	66	0.4%
	7220 Computer Software consultancy	64	0.4%
	851 Human Health Activities	59	0.4%
5421 Originators, compositors and print preparers	Total	11,086	
	222 Printing and service activities related to printing	6,198	55.9%
	221 Publishing	1,673	15.1%
	923 Other entertainment activities	238	2.1%
	744 Advertising	227	2.0%
	748 Miscellaneous business activities not elsewhere classified	213	1.9%
	52 Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	207	1.9%
	74209 Engineering activities and related technical consultancy	150	1.4%
	51 Wholesale trade and commission trade, except of motor vehicles and motorcycles	128	1.2%
	45 Construction	120	1.1%
	93 Other service activities	112	1.0%

Creative	Top ten Industries in which they are employed	Employed	Share
2452 Archivists and curators	Total	8,708	
	925 Library, archives, museums and other cultural activities	4,232	48.6%
	751 Administration of the State and the economic and social policy of the community	882	10.1%
	741 Legal, accounting, book keeping and auditing activities; tax consultancy; market research and public opinion polling; business and management consultancy; holdings	417	4.8%
	803 Higher Education	368	4.2%
	923 Other entertainment activities	239	2.7%
	91 Activities of membership organisations	206	2.4%
	45 Construction	155	1.8%
	748 Miscellaneous business activities not elsewhere classified	150	1.7%
	853 Social work activities	146	1.7%
	752 Provision of services to the community as a whole	123	1.4%
2432 Town planners	Total	7,922	
	74201 Architectural activities and related technical consultancy	4,603	58.1%
	751 Administration of the State and the economic and social policy of the community	1,518	19.2%
	70 Real Estate activities	371	4.7%
	741 Legal, accounting, etc. See above for further details	256	3.2%
	45 Construction	139	1.8%
	853 Social work activities	79	1.0%
	90 Sewage and refuse disposal, sanitation and similar activities	73	0.9%
	7220 Computer Software consultancy	59	0.7%
	801 Primary education	58	0.7%
	748 Miscellaneous business activities not elsewhere classified	51	0.6%
3414 Dancers and choreographers	Total	7,034	
	923 Other entertainment activities	2,205	31.3%
	52 Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	489	7.0%
	741 Legal, accounting, etc. See above for further details	424	6.0%
	51 Wholesale trade and commission trade, except of motor vehicles and motorcycles	339	4.8%
	45 Construction	293	4.2%
	748 Miscellaneous business activities not elsewhere classified	168	2.4%
	70 Real Estate activities	150	2.1%
	554 Bars	145	2.1%
	851 Human Health Activities	133	1.9%
	802 Secondary education	131	1.9%

Creative	Top ten Industries in which they are employed	Employed	Share
5495 Goldsmiths, silversmiths, precious stone workers	Total	6,697	
	362 Manufacture of jewellery and related articles	2,968	44.3%
	52 Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	890	13.3%
	45 Construction	631	9.4%
	28 Manufacture of fabricated metal products, except machinery and equipment	334	5.0%
	51 Wholesale trade and commission trade, except of motor vehicles and motorcycles	179	2.7%
	366 Miscellaneous manufacturing not elsewhere classified	165	2.5%
	27 Manufacture of basic metals	139	2.1%
	748 Miscellaneous business activities not elsewhere classified	128	1.9%
	923 Other entertainment activities	118	1.8%
	502 Maintenence and repair of motor vehicles	87	1.3%

Source: Office for National Statistics 2001 Census of Households

Two occupations included within the DCMS definitions were initially considered by CCI to fit the definition of creative occupations, and LFS tables were ordered on this basis. However, on examining the census matrices of the industries in which these occupations were employed, it became clear that they did not meet one of the usual characteristics – typically, creative industries account for at least 25 per cent of the employment of a creative occupation.

At best, only 18 per cent of those employed in '2126 Design and development engineers' are employed in the creative classification '742 Architectural activities and related technical consultancy', but the figure is in fact far lower, because that industry itself is very broadly defined and includes a substantial proportion of technical and engineering occupations. After disaggregation, the creative industry share of employment would be less than 10 per cent.

The second occupation, '5499 Hand craft occupations n.e.c.', belies its name and is substantially involved with car repairs and manufacture. It does not correlate with the arts and crafts occupations that its name suggests.

Table 46: The top ten industries for the '2126 Design and development engineers' occupation using 2001 census classifications and data.

Rejected Candidate Occupation	Top ten Industries in which they are employed	Employed	Share
2126 Design and development engineers	Total	62,586	
	742 Architectural activities and related technical consultancy	11,357	18.1%
	353 Manufacture of aircraft and spacecraft	3,902	6.2%
	31 Manufacture of electrical machinery and apparatus not elsewhere classified	3,356	5.4%
	28 Manufacture of fabricated metal products, except machinery and equipment	2,857	4.6%
	32 Manufacture of radio, television and communication equipment and apparatus	2,830	4.5%
	45 Construction	2,811	4.5%
	341 Manufacture of motor vehicles	2,665	4.3%
	642 Telecommunications	2,178	3.5%
	292 Manufacture of other general purpose machinery	1,946	3.1%
	7220 Computer Software consultancy	1,792	2.9%

Source: Office for National Statistics 2001 Census of Households

Table 47: The top ten industries for the '5499 Hand Craft occupations not elsewhere classified' occupation using 2001 census classifications and data.

Rejected Candidate Occupation	Top ten Industries in which they are employed	Employed	Share
5499 Hand craft occupations n.e.c.	Total	26,789	
	502 Maintenance and repair of motor vehicles	4,336	16.2%
	45 Construction	2,309	8.6%
	28 Manufacture of fabricated metal products, except machinery and equipment	1,869	7.0%
	366 Miscellaneous manufacturing not elsewhere classified	1,448	5.4%
	17 Manufacture of textiles	1,292	4.8%
	52 Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	1,150	4.3%
	341 Manufacture of motor vehicles	943	3.5%
	51 Wholesale trade and commission trade, except of motor vehicles and motorcycles	694	2.6%
	353 Manufacture of aircraft and spacecraft	692	2.6%
	501 Sale of motor vehicles	647	2.4%

Source: Office for National Statistics 2001 Census of Households

Appendix 8: Results of applying the Trident methodology to Australian datasets

The Trident methodology has now been applied to Australian Census data from the years 1976, 1981, 1996, 2001 and the 2006 dataset that was released in October 2007.

The results of the studies have revealed the patterns of growth, the shifts between segments and the extent of embedded employment in the wider economy with much greater clarity and consistency.

Over the period there was a sustained increase in embedded employment's share of total creative employment, from 31 per cent in 1996 to 35 per cent in 2006, with some segments such as Film, TV and Radio showing significantly higher increases.

Table 48: Total Australian creative employment 1996, 2001 and 2006 and the 10-year annualised growth rate.

Segment	1996	2001	2006	Annualised growth rate 1996-2006
Advertising & Marketing	35,472	45,830	54,429	4.4%
Architecture, Design & Visual Arts	98,432	111,805	128,138	2.7%
Film, TV & Radio	31,827	34,218	35,962	1.2%
Music & Performing Arts	25,317	29,621	28,156	1.1%
Publishing	81,159	80,156	81,405	0.0%
Software & Digital Content	81,672	133,847	146,340	6.0%
All Segments	353,879	435,477	474,430	3.0%
Share of total Australian employment	4.6%	5.4%	5.2%	

Source: Analysis by CCI of Australian Bureau of Statistics 1996, 2001, 2006 Census of Population and Housing

Table 49: Embedded employment's share of creative employment by segment between 1996, 2001 and 2006 and the 10-year annualised growth rate.

Segment	1996	2001	2006
Advertising & Marketing	47%	45%	51%
Architecture, Design & Visual Arts	36%	41%	44%
Film, TV & Radio	3%	7%	16%
Music & Performing Arts	33%	38%	39%
Publishing	23%	22%	28%
Software & Digital Content	37%	28%	30%
All Segments	31%	31%	35%

Source: Analysis by CCI of Australian Bureau of Statistics 1996, 2001, 2006 Census of Population and Housing

Income patterns

The Australian census datasets are available at much higher resolution than the equivalent UK datasets and also include, depending on purpose, either the mean income or the level of employment in 16 bands of income. Much more detailed analyses of income distribution can therefore be conducted with confidence.

The following examples illustrate what analysis can be done with such data were it to be available in the UK.

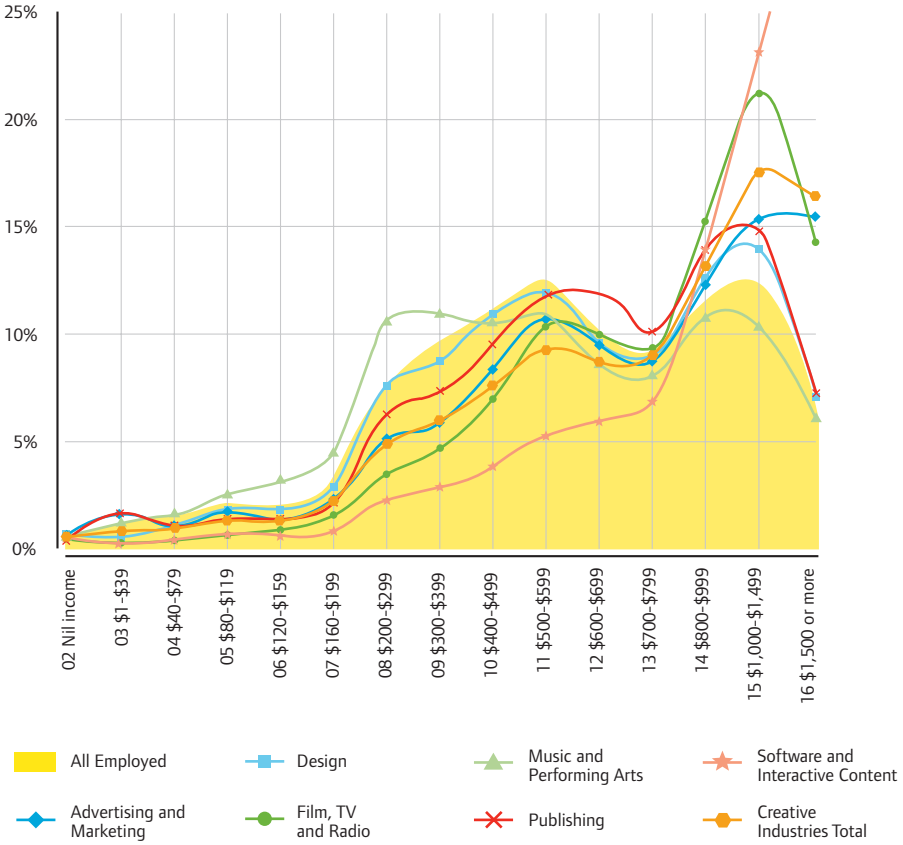
The patterns of income distribution within the Australian segments 2001

There were 150,000 people employed (34 per cent) across the six creative segments who were earning less than $600 (equivalent to £258) per week in 2001 dollars. Of these, 77,000 earned less than $400 a week. However this represents a much lower proportion of total creative workforce employment (18 per cent) than the population as a whole (27 per cent).

The patterns of distribution of weekly incomes vary substantially across the segments. This can be seen in Figure 4 where the lines represent a particular weekly income band's share of the total number of people employed in that segment. The shaded area of the charts also shows the distribution of income for all people employed in Australia.

Compare the distribution pattern of the Music segment (the green line) which has a fatter 'tail' (more people than normal earning less money) and a smaller 'head' (fewer people earning higher money) to that of two other segments – Software and Film – which exhibit tiny tails and fat heads (a steady slope up to the right indicating that a higher proportion of their total employment is at the highest income levels).

Figure 4: The variation in the distribution of employment within the weekly income bands for each of the creative segments compared with Australian employment.



Source: Analysis by CCI of custom ABS 2001 Census tables

Australian mean annual personal incomes, 2001

Generally, those in the creative workforce who were employed within creative occupations had a higher annual mean income than those employed within the same Industry Division.

Creatives embedded in Communication Services and Finance and Insurance earned 44 per cent and 42 per cent respectively more than their Division average, while those working in Manufacturing earned 12 per cent more than the average across the Division (Table 50). Workers in the Writing, Publishing and Print Media segment (which forms part of Manufacturing) were 7 per cent above the Division average.

Table 50 : Australian mean annual income of people within the Creative Trident compared with the mean of their Division of employment. (An Australian dollar was worth around 36 pence in Sterling in 2001).

2001 Mean Annual Income and the variance from the Division	Division Mean	Creative Segments and Embedded Creatives		Specialist Creative Segments Mean		Embedded Creatives Mean	
	Annual Income	Annual Income	% Variation from Division's mean income	Income per Annum	% Variation from Division's mean income	Income per Annum	% Variation from Division's mean income
A Agriculture, Forestry and Fishing	$28,179	$41,608	48%			$41,608	48%
B Mining	$68,402	$68,783	1%			$68,783	1%
C Manufacturing	$38,596	$41,607	8%	$40,732	6%	$44,105	14%
D Electricity, Gas and Water Supply	$53,428	$64,009	20%			$64,009	20%
E Construction	$38,316	$43,861	14%			$43,861	14%
F Wholesale Trade	$38,081	$54,627	43%			$54,627	43%
G Retail Trade	$23,494	$39,311	67%			$39,311	67%
H Accommodation, Cafes and Restaurants	$23,187	$27,828	20%			$27,828	20%
I Transport and Storage	$40,463	$54,515	35%			$54,515	35%
J Communication Services	$45,622	$65,788	44%			$65,788	44%
K Finance and Insurance	$48,714	$68,987	42%			$68,987	42%
L Property and Business Services	$45,121	$54,778	21%	$55,070	22%	$52,874	17%
M Government Administration and Defence	$43,667	$49,161	13%			$49,161	13%
N Education	$40,527	$33,261	-18%			$33,261	-18%
O Health and Community Services	$34,955	$40,422	16%			$40,422	16%
P Cultural and Recreational Services	$32,465	$38,901	20%	$39,087	20%	$36,106	11%
Q Personal and Other Services	$32,850	$30,808	-6%	$28,327	-14%	$33,217	1%
R Non-Classifiable Economic Units	$32,462	$41,601	28%			$41,601	28%
Z Not Stated	$23,492	$31,037	32%			$31,037	32%
Total	$36,276	$47,658	31%	$47,866	32%	$47,201	30%

Source: Analysis by CCI of custom ABS 2001 Census tables

Notably, the creatives Embedded within the Education division had annual salary averages 18 per cent below the Division average.

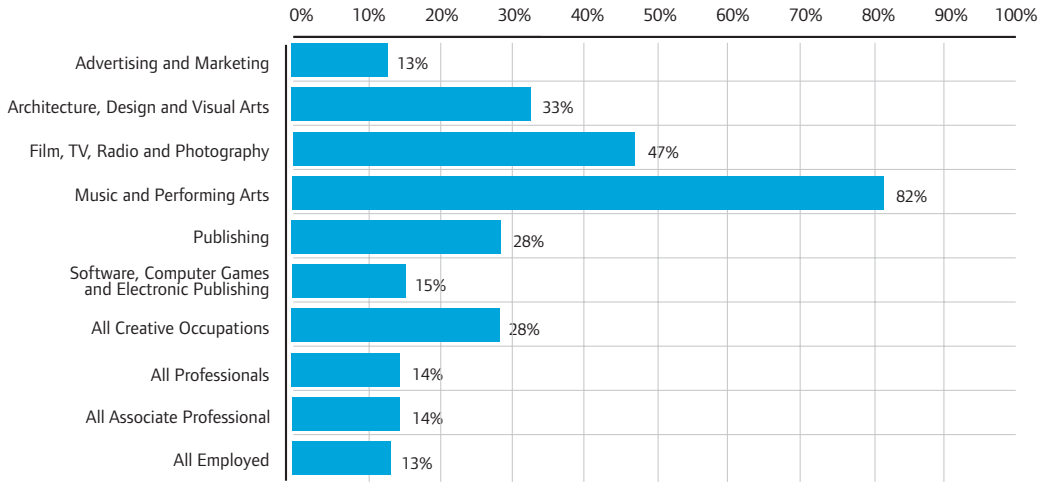
Appendix 9: Self-employment rates within the creative occupations and industries

Self-employment of individuals with creative occupations.

The proposition that self-employment is the norm for the creative workforce is not borne out by an examination of the facts. While the rate of self-employment for creative occupations in the UK is roughly twice that of the general workforce it still represents only 28 per cent of the employment of those in creative occupations (Figure 5).[45]

45. Analysis by CCI of custom tables from the UK LFS selecting on LFS table Main Job, 2006, analysed at SOC four digits.

Figure 5: The self-employment rate of creative occupation segments in 2006.



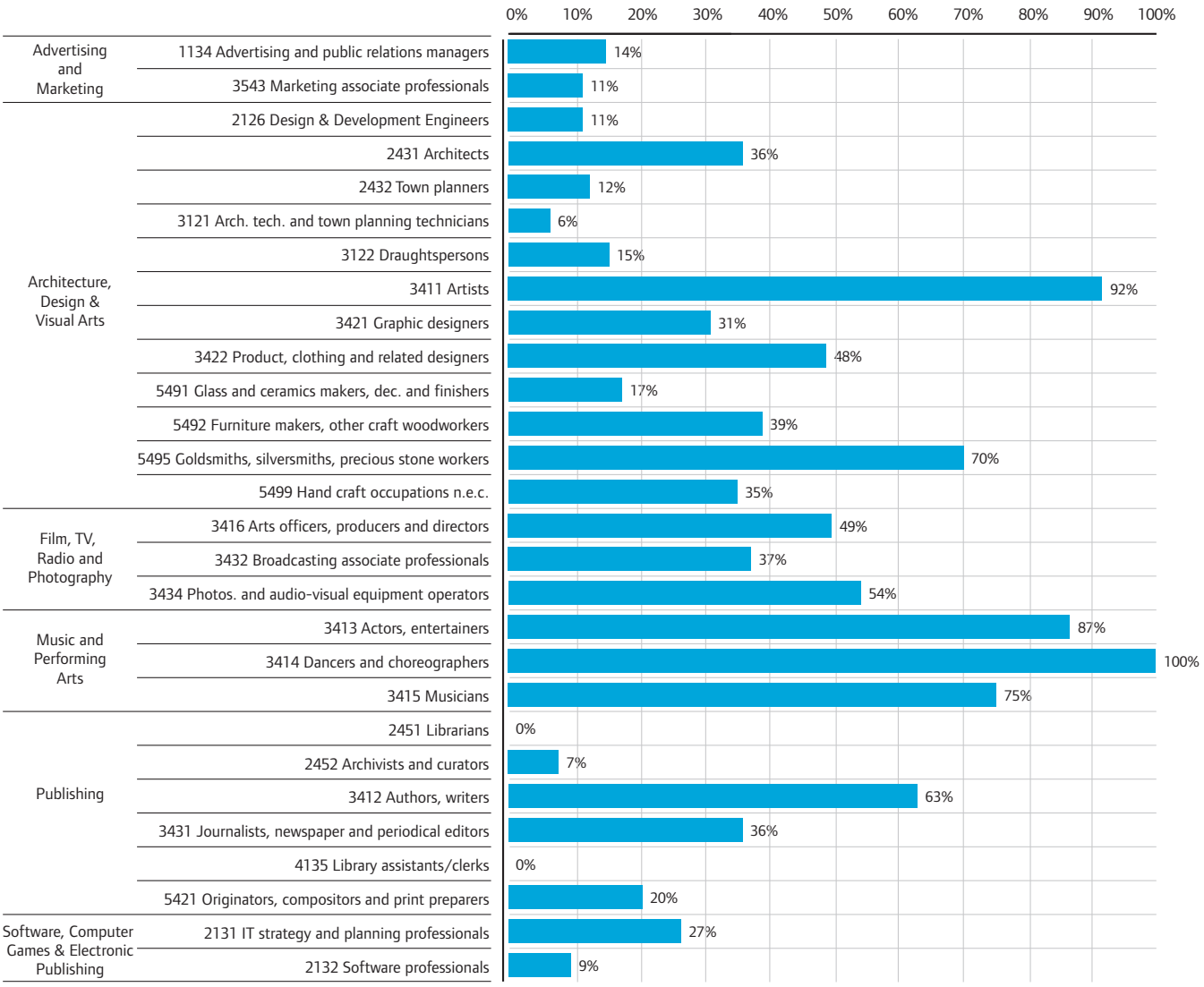
Source: CCI analysis of custom LFS data 2006

As Figure 6 shows, there is great diversity across segments in the self-employment rate, depending on occupation, individual preferences, age and possibly skill level: some occupations naturally have substantially higher numbers of self-employed people such as '3411 Artists' with 92 per cent self-employment and '3414 Dancers & choreographers' at 100 per cent. However others are perhaps lower than average, for example '3412 Authors writers' with 62 per cent and '3421 Graphic designers' with 32 per cent self-employment.

Self-employment within creative industries

The patterns are similar when looked at from the dimension of creative industries. Table 51 shows that across all creative industries, the self-employment rate is 27 per cent, compared with the whole-economy rate of 13 per cent. The highest rate is in Music and Performing Arts (64 per cent), followed by Film, TV, Radio and Photography (37 per cent); Software, Computer Games & Electronic Publishing has the lowest rate (17 per cent).

Figure 6: The self-employment rate of disaggregated creative occupations segments in 2006.



Source: CCI analysis of custom LFS data 2006

Of greater importance perhaps to research on the sustainability of the creative economy is the proportion of sole-practitioner businesses within segments and the pattern of distribution of income.

Australian census data for 2006 show that, on average, those who own a creative business employing up to 19 staff earn a 50 per cent higher mean income than sole-practitioners in the same industry, while owners of a creative business employing 20 or more staff earn 73 per cent more than the smaller business owners.

It would seem that creatives who lack the business acumen to know how to grow their practice to the point that it can support a number of employees are relegated to the lower rungs of the earnings ladder. With some notable exceptions, creative excellence alone in one's chosen craft is no guarantee of a reasonable income.

Table 51: The rate of self-employment in 'Main Jobs' in UK creative industries 2006.

Industry Segment	Detailed Industry Classification	Self Employment rate within Main Job
Advertising and Marketing	7440: Advertising	21%
Advertising and Marketing Segment		21%
Architecture, Visual Arts and Design	3622: Jewellery etc. manufacture	52%
	7420: Archit. engineering etc. consultncy	27%
	9252: Museum activities	4%
Architecture, Visual Arts and Design Segment		25%
Film, TV, Radio and Photography	7481: Photographic activities	59%
	9211: Motion picture video production	49%
	9220: Radio TV activities	25%
Film, TV, Radio and Photography Segment		37%
Music and Performing Arts	2214: Sound recording publishing	0%
	9231: Artistic literary creation etc.	78%
	9232: Arts facilities	22%
	9234: Other entertainment activities	58%
Music and Performing Arts Segment		64%
Publishing	2211: Book publishing	24%
	2212: Newspaper publishing	5%
	2213: Journal periodical publishing	19%
	2215: Other publishing	14%
	9251: Library archive activities	1%
Publishing Segment		11%
Software, Computer Games & Electronic Publishing	7220: Computer software consultancy	17%
Software, Computer Games & Electronic Publishing Segment		17%
All creative industries		27%

Source: Analysis by CCI of Australian Bureau of Statistics 1996, 2001, 2006 Census of Population and Housing

Appendix 10: Mapping creative industry-relevant census SIC to LFS SIC codes

The following table correlates the industry classifications and the employment data used for the 2001 census and the LFS. The LFS four-digit industry classifications are aggregated to align with the closest detailed census classification, which may be at two digits ('72 Computers') or three. The LFS employment figures are used to establish the relevant proportion of the employment at the correlating census classification. As previously discussed, disaggregation is not synonymous with simple scaling or applying a proportional calculation.

Table 52: The correlation between employment in the 2001 LFS four-digit industry classification and the 2001 census classification.

Census Industry Classifications in Use	LFS employment proportion of Census Selection	Action on Census Data	LFS Industry	Share of LFS Subtotal	Action on LFS Data
221 Publishing	100%	Use	2211 Publishing of books	19%	Use
			2212 Publishing of newspapers	31%	Use
			2213 Publishing of journals and periodicals	22%	Use
			2214 Publishing of sound recordings	1%	Use
			2215 Other publishing	27%	Use
925 Library, archives, museums and other cultural activities	92%	Use	9251 Library and archive activities	51%	Use
			9252 Museum activities and preservation of historical sites and buildings	41%	Use
362 Manufacture of jewellery and related articles	84%	Use	3622 Manufacture of jewellery and related articles not elsewhere classified	84%	Use
72 Computer and related activities	69%	Disaggregate	7220 Computer Software consultancy	69%	Use
No Acceptable Code			3650/1 Manufacture of professional and arcade games	Data are not commonly available for this code	
742 Architectural and engineering activities and related technical consultancy	43%	Disaggregate	7420/1 Architectural and engineering activities and related technical consultancy	43%	Use
744 Advertising	100%	Use	7440 Advertising	100%	Use
No Acceptable Code			7481 Photographic activities	15%	Use
920 Recreational, cultural and sporting activities n.o.s.		Use		No equivalent	NA
921 Motion picture and video activities	65%	Use	9211 Motion picture and video production	65%	Use
922 Radio and television activities	100%	Use	9220 Radio and television activities	100%	Use
923 Other entertainment activities	94%	Use	9231 Artistic and literary creation and interpretation	57%	Use
			9232 Operation of arts facilities	13%	Use
			9234 Other entertainment activities not elsewhere classified	24%	Use
924 News agency activities	100%	Use	9240 News agency activities	100%	Use

Appendix 11: Coding Lists

An example of the job titles that are coded within standard occupation classifications

Every industry or occupation classification system is constrained in its ability to capture the variety of names given to people's jobs and primary activities in the real world. Coding lists are used to provide consistency in references to similar functions or business activities. Every formally identified occupation classification may go under ten, 40 or in some cases even 100 other names which are in common usage. These terms are often synonyms, but some classifications are treated more as a 'grab bag' of assorted activities which may have only a cursory correlation, such as being mainly self-employed artists, musicians, writers. The following is a small extract from the SOC2000 coding list.

Table 53: Occupations included in '1134 Advertising and public relations managers' and '2131 IT strategy and planning professionals'.

Occupation	Occupations included within the Classification	
1134 Advertising and public relations managers	Director of external relations	Manager, affairs, public
	Director of fund raising	Manager, appeal
	Director, account (advertising)	Manager, appeals
	Director, advertising	Manager, campaign
	Director, appeal	Manager, fundraising
	Director, appeals	Manager, lottery
	Director, creative	Manager, media
	Director, media	Manager, portfolio (advertising)
	Head (public relations)	Manager, press (advertising)
	Head of public affairs	Manager, production (advertising)
	Head of public relations	Manager, projects (advertising)
	Manager (advertising)	Manager, publicity
	Manager (public relations)	Manager, raising, fund
	Manager, account (advertising)	Manager, relations, public
	Manager, account, advertising	Manager, tourism
	Manager, advertisement	Manager, traffic (advertising)
	Manager, advertising	Owner (advertising agency)
2131 IT strategy and planning professionals	Adviser, systems	Consultant, support, technical
	Architect, data	Consultant, systems
	Architect, software	Consultant, technical, computer
	Architect, technical, migration (software)	Consultant, technology, information
	Consultant (computing)	Consultant, telecommunications
	Consultant, applications	Consultant, telecommunications

Appendix 12: Census 2001 – Disaggregating the data records of two industry classifications

Disaggregating '72 Computer and related activities'

The census employment for the industry classification '72 Computer and related activities' is 540,290, which is comparable to the figure under LFS for 2001 (531,960) when five 4-digit SIC industries are aggregated to two digits.

The four-digit industry classification relevant to our methodology is '7220 Computer Software consultancy' which accounts for 69 per cent of the LFS total for '72 Computer and related activities'. This factor is then applied to the census total to derive a gross figure for 7220 Computer Software consultancy (Table 54).

The target specialist to support an employment ratio of 53 per cent: 47 per cent (Table 55) for the disaggregated industry is determined with reference to the proportions within the custom LFS occupation within industries sub-totalled matrix acquired from the ONS.

These factors are then applied in a matrix to determine the new target figures for the 7220 category, relegating the balance to '7260 Other computer activities'.

Table 54: The more detailed industry classifications within '72 Computer and related activities' available from LFS datasets.

Mix from LFS SIC Totals	Census	LFS Proportion	LFS Employed
7210 Computer hardware consultancy		1%	6,743
7220 Computer Software consultancy after disaggregation	374,126	69%	368,358
7230 Data processing		2%	11,788
7240 Data base activities		2%	10,454
7250 Repair of office computer equipment		4%	23,498
7260 Other computer activities		21%	111,119
72 Computer and related activities	540,290	100%	531,960

Source: CCI analysis of custom LFS data 2001 and Household Census Data 2001

Table 55: The summary disaggregation matrix for '72 Computer and related activities'.

	Creative Occupations	Other	Total	Split from LFS
Specialist to support ratio from LFS matrix for 7220	53%	47%	100%	
7220 Computer Software consultancy	198,287	175,839	374,126	69%
7260 Other computer activities	1,620	164,543	166,164	31%
72 Computer and related activities	199,907	340,383	540,290	100%
Specialist Ratio from Census for 72	37%	63%	100%	

Source: CCI analysis of custom LFS data 2001 and Household Census Data 2001

A subset of the 2001 census employment database of occupations by industries is then established, containing 350 records – each record consisting of the number of people employed within one of the 350 occupations that also have employment within the industry classification '72 Computer and related activities'.

The details of employment within each occupation are then proportionately assigned to either '7220 Computer Software consultancy' or '7260 Other computer activities' on the basis of the relevance of the occupation to the software development and publishing activity, with a proportion of this employment being allocated to the remainder industry (reflecting the dispersal in the real world).

The result is 698 records with the allocation of the employment in total matching the LFS split ratio and the specialist support ratio for '7220'.

The existing 350 records for '72 Computer and related activities' are then deleted from the 2001 employment database, and the 698 disaggregated records imported.

Disaggregating '742 Architectural and engineering'

Disaggregating '742 Architectural and engineering' into the architecture-relevant activities from the engineering activities was more difficult, as no UK employment data are available for estimating the differential proportions on the basis of industry. So instead we examined the range and proportion of occupations employed within the industry in the 2001 census.

The occupations are grouped into 'Architecture and Design occupations', 'Other technical services occupations such as engineers' and 'General office, administration and support occupations' (Table 56).

Table 56: The blend of occupations employed within '742 Architectural and engineering'.

Employment within 742 Architectural and engineering	Employment	Share	Split
Architecture and Design Occupations	89,770	23%	
Subtotal creative occupations	102,161	26%	43%
Other technical services occupations such as engineers	134,751	34%	57%
General office administration and support occupations	154,048	39%	
Grand Total	390,960	100%	

Source: Office for National Statistics 2001 Census

Table 57: The summary disaggregation matrix for '742 Architectural and engineering'.

	Creative Occupations	Other	Total	Split
Specialist Ratio for 74201	55%	45%	100%	
74201 Architecture Services	92,462	75,651	168,113	43%
74209 Other Technical Services	9,188	213,660	222,847	57%
742 Architectural and engineering	101,650	289,310	390,960	100%
Specialist Ratio from Census for 742	26%	74%	100%	

Source: Office for National Statistics 2001 Census

The ratio between Architecture and Design Occupations and the Other Technical Services Occupations was calculated to be 43 per cent to 57 per cent and this is applied as one factor to split employment into two classifications: '74201 Architecture Services' and a custom classification we created, '74209 Other Technical Services'.

The same process as is used in disaggregating '72 Computer and related activities' is applied to the master employment database, and the initial 350 records for '742' became 430 records across the two new industries, while maintaining the correct totals for creative occupations and 'other' or support occupations.

Appendix 13: Detailed tables and comparisons with DCMS Economic Estimates

This section shows a breakdown of specialist and embedded employment by creative segment (where creative segments comprise multiple three- or four-digit sub-divisional industries, sometimes from across different Divisions). As shown below, this allows analysis of the variations across segments in the proportion of specialist, support and embedded employment.

Total creative employment grew by 1991 to just over 1.1 million people.

Table 58: Creative segments' specialist, support and embedded employment for 1981.

UK Employment By Creative Segment 1981	Creative Occupations within creative segment (Specialist)	Non-creative Occupations within creative segment (Specialist)	Creative Industry (Sub-Total)	Creative Occupations in non-creative Industries (Embedded)	Creative Occupations (Sub-Total)	Total Trident
Advertising and Marketing	18,840	24,680	43,520	5,710	24,550	49,230
Architecture, Visual Arts and Design	6,530	13,890	20,420	268,130	274,660	288,550
Film, TV, Radio and Photography	32,410	54,020	86,430	31,740	64,150	118,170
Music and Performing Arts	42,490	14,330	56,820	29,000	71,490	85,820
Publishing	42,840	143,010	185,850	49,110	91,950	234,960
Software, Computer Games & Electronic Publishing	13,910	38,920	52,830	73,440	87,350	126,270
Total of all Segments	157,020	288,850	445,870	457,130	614,150	903,000

Source: Analysis by CCI of custom 1981 Census data tables from the Office for National Statistics

Table 59: Creative segments' specialist, support and embedded employment for 1991.

UK Employment By Creative Segment 1991	Creative Occupations within Creative Segment (Specialist)	Non-creative Occupations within Creative Segment (Specialist)	Creative Industry (Sub-Total)	Creative Occupations in Non-creative Industries (Embedded)	Creative Occupations (Sub-Total)	Total Trident
Advertising and Marketing	28,480	25,280	53,760	13,830	42,310	67,590
Architecture, Visual Arts and Design	6,420	9,040	15,460	275,110	281,530	290,570
Film, TV, Radio and Photography	49,290	55,000	104,290	6,560	55,850	110,850
Music and Performing Arts	72,930	16,400	89,330	32,230	105,160	121,560
Publishing	68,120	121,440	189,560	61,330	129,450	250,890
Software, Computer Games & Electronic Publishing	60,220	86,280	146,500	135,690	195,910	282,190
Total of all Segments	285,460	313,440	598,900	524,750	810,210	1,123,650

Source: Analysis by CCI of custom 1991 Census data tables from the Office for National Statistics

As Table 60 shows, employment in 2001 had grown to 1.9 million people.

Table 60: Creative segments' specialist, support and embedded employment for 2001.

UK Employment By Creative Segment 2001	Creative Occupations within Creative Segment (Specialist)	Non-creative Occupations within Creative Segment (Specialist)	Creative Industry (Sub-Total)	Creative Occupations in Non-creative Industries (Embedded)	Creative Occupations (Sub-Total)	Total Trident
Advertising and Marketing	46,133	55,252	101,385	79,835	125,968	181,220
Architecture, Visual Arts and Design	124,544	56,530	181,074	203,393	327,937	384,467
Film, TV, Radio and Photography	63,876	81,614	145,490	43,216	107,092	188,706
Music and Performing Arts	41,215	99,047	140,262	25,828	67,043	166,090
Publishing	109,818	190,746	300,564	82,860	192,678	383,424
Software, Computer Games & Electronic Publishing	166,584	207,452	374,036	209,935	376,519	583,971
Total of all Segments	552,170	690,641	1,242,811	645,067	1,197,237	1,887,878

Source: Analysis by CCI of custom 2001 Census data tables from the Office for National Statistics

While the total level of employment between 2001 to 2006 changed by less than 100,000, Table 61 shows there were quite major shifts in the proportions between specialist and support staff – with an apparent increase in the number of specialist staff and decrease in support staff – and to a lesser extent between specialist and and embedded employment. We cannot rule out however that some degree of this could result from the lower level of detail of the 2001 Census Industry classificiations.

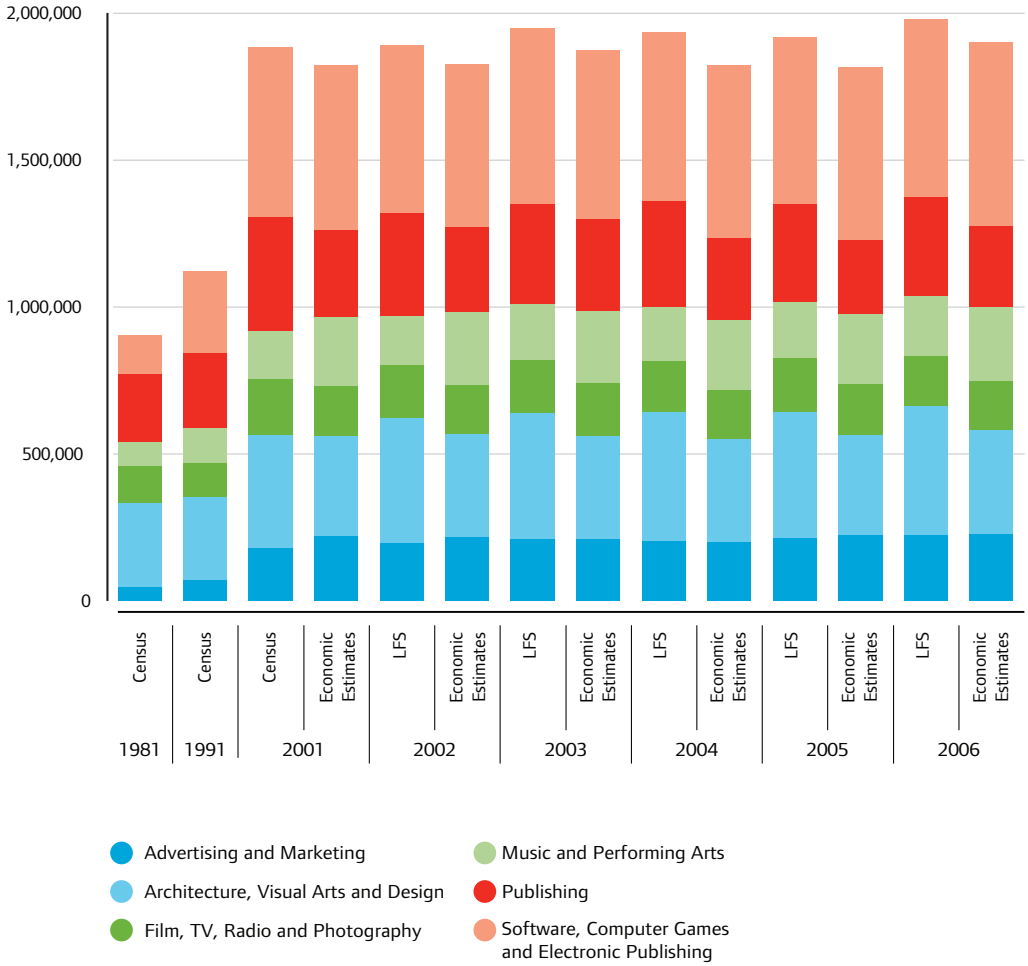
Table 61: Creative segments' specialist, support and embedded employment for 2006.

UK Employment By Creative Segment 2006	Creative Occupations within Creative Segment (Specialist)	Non-creative Occupations within Creative Segment (Specialist)	Creative Industry (Sub-Total)	Creative Occupations in Non-creative Industries (Embedded)	Creative Occupations (Sub-Total)	Total Trident
Advertising and Marketing	44,609	46,634	91,243	134,775	179,384	226,018
Architecture, Visual Arts and Design	168,493	53,150	221,643	213,727	382,220	435,370
Film, TV, Radio and Photography	101,938	53,211	155,149	19,980	121,918	175,129
Music and Performing Arts	53,052	134,857	187,909	14,180	67,232	202,089
Publishing	138,667	122,235	260,902	73,180	211,847	334,082
Software, Computer Games & Electronic Publishing	193,172	175,024	368,196	242,402	435,574	610,598
Total of All Segments	699,931	585,111	1,285,042	698,244	1,398,175	1,983,286

Source: Analysis by CCI of custom 2006 LFS data tables from the Office for National Statistics

The following figures show the degree of correlation between CCI's estimates employment within the segments and those in the DCMS Economic Estimates.

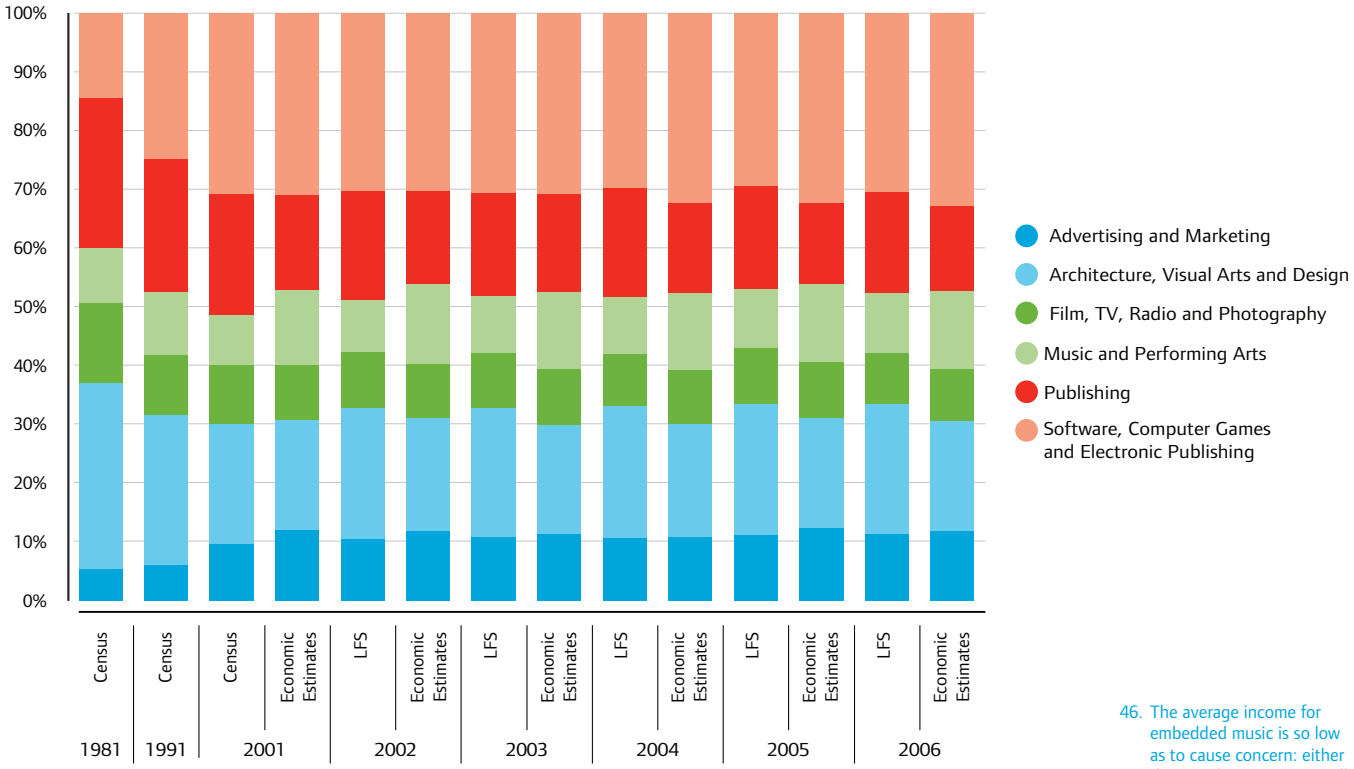
Figure 7: Comparison of the CCI employment estimates for each segment with those of the DCMS Economic Estimates.



Source: Analysis by CCI of DCMS reports, and custom Census and LFS data tables from the Office for National Statistics CCI

Each segment's share of total creative employment is shown in Figure 8, which also illustrates the long-run growth in the Software, Computer Games and Electronic Publishing segment and the declining shares of the Publishing and Architecture, Visual Arts and Design segments.

Figure 8: Comparison of the shares of segment employment estimates from CCI with those of the DCMS Economic Estimates.

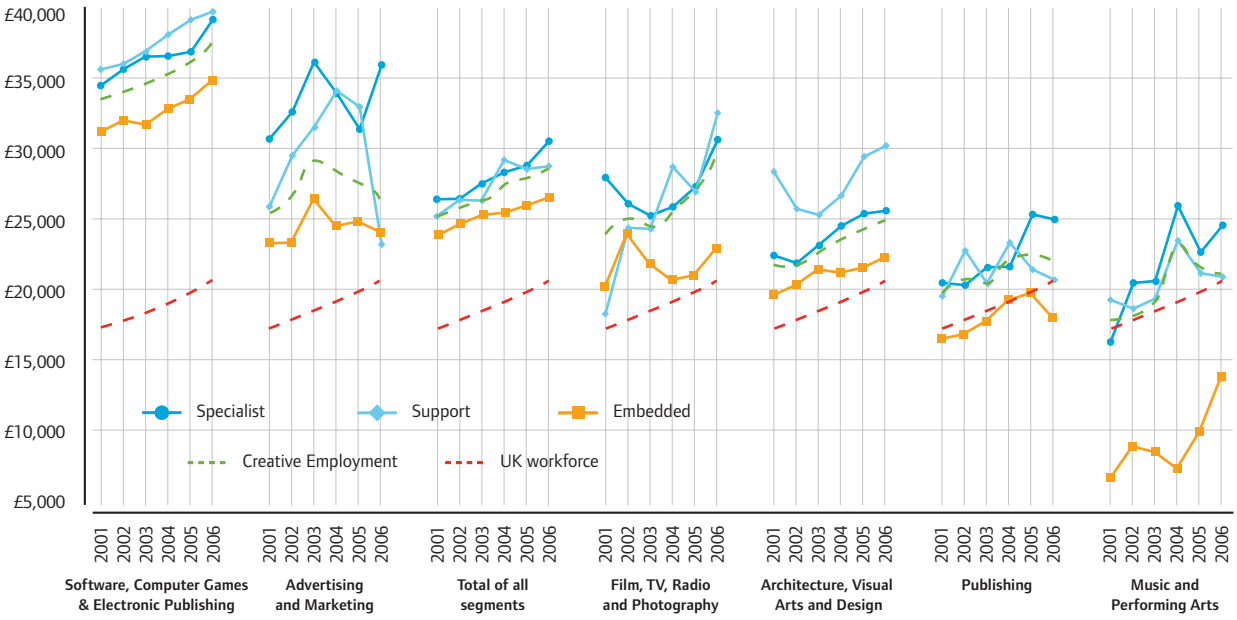


Source: Analysis by CCI of DCMS reports and custom Census and LFS data tables from the Office for National Statistics

Figure 9 shows how the average annual earnings of most specialist, support and embedded staff working in the creative economy are higher than those of the national average. The poorest performing areas are embedded professionals in Music and Performing Arts,[46] and Publishing, but even there the average income of music has grown strongly and recovered some of the gap with the national average.

46. The average income for embedded music is so low as to cause concern: either the sample size is too small to provide accurate figures or else the 25,000 people (Census 2001) who are employed in their main job as embedded musicians have other sources of financial support.

Figure 9: Comparison of the average annual incomes of specialist, support and embedded creatives within each segment with that of the national average for 2001 to 2006.



Source: Analysis by CCI of DCMS reports and custom Census and LFS data tables from the Office for National Statistics

Appendix 14: Embeddedness by Two-digit Industries

Table 62: The 25 sub-divisions with the highest proportion of embedded employment 2001 UK census data.

The 25 sub-divisions with the highest proportion of embedded employment 2001 UK Census Data (disaggregated)	Total Employment	Embedded (declining order)	Embedded Share
74 Other business activities	2,202,127	112,061	5.1%
80 Education	2,058,329	43,026	2.1%
52 Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	2,617,565	36,298	1.4%
75 Public administration and defence; Compulsory social security	1,573,466	35,325	2.2%
65 Financial intermediation, except insurance and pension funding	739,672	34,668	4.7%
36 Manufacture of furniture, manufacturing not elsewhere classified	308,076	34,336	11.1%
64 Post and Telecommunications	712,437	30,676	4.3%
85 Health and social work	2,922,064	28,041	1.0%
22 Publishing, printing and reproduction of recorded media	417,407	25,555	6.1%
51 Wholesale trade and commission trade, except of motor vehicles and motorcycles	1,171,828	21,190	1.8%
45 Construction	1,830,962	21,049	1.1%
72 Computer and related activities	540,295	19,816	3.7%
26 Manufacture of other non-metallic mineral products	121,251	18,026	14.9%
66 Insurance and pension funding, except compulsory social security	301,046	14,456	4.8%
35 Manufacture of other transport equipment	214,923	8,646	4.0%
70 Real Estate activities	372,855	8,223	2.2%
29 Manufacture of machinery and equipment not elsewhere classified	325,743	8,190	2.5%
67 Activities auxiliary to financial intermediation	201,557	8,026	4.0%
55 Hotels and restaurants	1,286,375	7,987	0.6%
24 Manufacture of chemicals and chemical products	272,837	7,700	2.8%
63 Supporting and auxiliary transport activities; activities of travel agents	379,980	7,508	2.0%
91 Activities of membership organisations	185,958	7,435	4.0%
73 Research and development	115,074	7,395	6.4%
32 Manufacture of radio, television and communication equipment and apparatus	119,341	6,669	5.6%
30 Manufacture of office machinery and computers	69,250	6,653	9.6%
12 Mining of uranium and thorium ores	46	3	6.50%
Grand Total	26,575,780	645,067	2.4%

Source: Analysis by CCI of custom Census 2001 table from the Office for National Statistics

Table 63: Growth in embedded creative employment across the Industry sub-sectors.

UK Industry at 2 Digits	Census			Difference from 1981 to 2001
	1981	1991	2001	
01 Agriculture, hunting and related service activities	0.1%	0.1%	0.7%	0.6%
02 Forestry, logging and related service activities	0.8%	0.9%	2.5%	1.7%
05 Fishing, operation of fish hatcheries and fish farms			0.5%	0.5%
10 Mining of coal and lignite; extraction of peat			0.5%	0.5%
11 Extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction excluding surveying	0.3%	0.5%	3.3%	3.0%
12 Mining of uranium and thorium ores	0.4%	1.7%	6.5%	6.1%
13 Mining of metal ores	4.1%	3.3%	2.3%	-1.8%
14 Other mining and quarrying	1.7%	1.3%	1.8%	0.1%
15 Manufacture of food products and beverages	1.2%	1.4%	1.2%	-0.1%
16 Manufacture of tobacco products	2.3%	3.1%	2.6%	0.2%
17 Manufacture of textiles	1.1%	1.7%	2.8%	1.7%
18 Manufacture of wearing apparel; dressing and dyeing of fur	0.9%	1.7%	3.6%	2.7%
19 Tanning and dressing of leather; Manufacture of luggage, handbags, saddlery harness and footwear			2.3%	2.3%
20 Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	1.0%	0.8%	4.9%	3.9%
21 Manufacture of pulp, paper and paper products	1.3%	1.1%	2.3%	1.1%
22 Publishing, printing and reproduction of recorded media	0.5%	3.8%	6.1%	5.6%
23 Manufacture of coke, refined petroleum products and nuclear fuel	0.3%	0.8%	3.9%	3.6%
24 Manufacture of chemicals and chemical products	18.2%	24.5%	2.8%	-15.4%
25 Manufacture of rubber and plastic products	1.7%	1.6%	2.3%	0.6%
26 Manufacture of other non-metallic mineral products	1.1%	1.5%	14.9%	13.7%
27 Manufacture of basic metals			1.3%	1.3%
28 Manufacture of fabricated metal products, except machinery and equipment			1.6%	1.6%
29 Manufacture of machinery and equipment not elsewhere classified			2.5%	2.5%
30 Manufacture of office machinery and computers			9.6%	9.6%
31 Manufacture of electrical machinery and apparatus not elsewhere classified	1.3%	1.2%	2.9%	1.6%
32 Manufacture of radio, television and communication equipment	3.6%	2.7%	5.6%	2.0%
33 Manufacture of medical, precision and optical instruments, watches and clocks	12.8%	14.7%	5.6%	-7.2%
34 Manufacture of motor vehicles, trailers and semi-trailers	4.0%	3.8%	2.0%	-2.0%
35 Manufacture of other transport equipment	2.2%	1.5%	4.0%	1.9%

UK Industry at 2 Digits	Census			Difference from 1981 to 2001
	1981	1991	2001	
36 Manufacture of furniture, manufacturing not elsewhere classified	4.2%	4.3%	11.1%	6.9%
37 Recycling	5.3%	4.0%	0.8%	-4.5%
40 Electricity, gas, steam and hot water supply			3.8%	3.8%
41 Collection, purification and distribution of water	0.3%	0.2%	2.9%	2.7%
45 Construction			1.1%	1.1%
50 Sale, maintenance and repair of motor vehicles and motorcycles; Retail sale of automotive fuel	0.8%	0.6%	0.6%	-0.2%
51 Wholesale trade and commission trade, except of motor vehicles and motorcycles	1.1%	1.1%	1.8%	0.7%
52 Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	0.9%	1.0%	1.4%	0.5%
55 Hotels and restaurants	0.5%	0.6%	0.6%	0.1%
60 Land transport; Transport via pipelines	0.2%	0.2%	0.5%	0.3%
61 Water transport	0.6%	1.0%	2.5%	2.0%
62 Air transport	1.6%	1.7%	2.5%	1.0%
63 Supporting and auxiliary transport activities; activities of travel agents	0.8%	1.1%	2.0%	1.2%
64 Post and Telecommunications	0.8%	1.6%	4.3%	3.5%
65 Financial intermediation, except insurance and pension funding	1.5%	2.4%	4.7%	3.1%
66 Insurance and pension funding, except compulsory social security	1.8%	3.7%	4.8%	3.0%
67 Activities auxiliary to financial intermediation	1.7%	2.1%	4.0%	2.3%
70 Real Estate activities			2.2%	2.2%
71 Renting of machinery and equipment without operator	4.9%	2.8%	2.1%	-2.8%
72 Computer and related activities	0.0%	0.0%	3.7%	3.7%
73 Research and development	5.1%	4.3%	6.4%	1.4%
74 Other business activities	8.6%	9.0%	5.1%	-3.5%
75 Public administration and defence; Compulsory social security	2.2%	2.0%	2.2%	0.1%
80 Education	1.3%	1.5%	2.1%	0.8%
85 Health and social work	0.4%	0.4%	1.0%	0.6%
90 Sewage and refuse disposal, sanitation and similar activities			1.0%	1.0%
91 Activities of membership organisations	2.8%	2.4%	4.0%	1.2%
92 Recreational, cultural and sporting activities	4.3%	5.5%	0.9%	-3.4%
93 Other service activities	2.7%	2.6%	1.4%	-1.3%
95 Private households with employed persons			0.4%	0.4%
99 Extra-territorial organisations and bodies		6.2%	4.2%	4.2%
Grand Total	1.9%	2.2%	2.4%	0.5%

Source: Analysis by CCI of custom Census data tables from the Office for National Statistics

A similar table constructed for the years 2001 to 2006 (Table 64) uses a different data source, the LFS, to construct the level of embeddedness. As a result the figures for 2001 from the two sources will be similar but rarely the same and this is reflected in the different total; 2.4 per cent from census and 2.54 per cent from LFS.

Table 64: The changes in the creative embedded share of two-digit industries employment between 2001 and 2006 using LFS data.

Subdivision	2001	2002	2003	2004	2005	2006	% change
01:Agriculture hunting etc.	0.3%		0.8%	0.6%	0.7%	0.7%	332%
41:Water collection purif. supply etc.	1.6%	0.7%	1.3%	1.4%	2.0%	2.9%	115%
18:Clothing, fur manufacture	3.5%	5.2%	3.9%	6.7%	8.3%	8.2%	90%
92:Recreational cultural sporting activ.	0.7%	0.6%	1.2%	1.1%	1.1%	1.0%	53%
17:Textile manufacture	1.8%	3.1%	3.4%	2.9%	3.1%	4.1%	44%
50:Sales of motor vehs parts fuel etc.	0.3%	0.4%	0.5%	0.4%	0.3%	0.7%	42%
19:Leather leather goods manufacture	3.3%	2.1%	2.2%	1.6%	0.8%	6.8%	40%
70:Real estate activities	0.7%	1.6%	0.9%	1.1%	1.1%	1.9%	32%
32:Radio TV communication eqt man.	6.1%	4.9%	5.0%	5.6%	8.0%	6.4%	31%
29:Mach. eqt. manufacture	1.7%	2.2%	1.7%	2.7%	2.6%	2.5%	30%
11:Oil gas extractn etc. (not surveying)	2.6%	3.1%	2.1%	4.2%	3.7%	3.2%	22%
21:Pulp paper paper prods manufacture	3.6%	5.2%	3.4%	3.8%	4.7%	5.9%	21%
55:Hotels restaurants	0.4%	0.5%	0.5%	0.4%	0.5%	0.5%	21%
36:Furniture etc. manufacture	13.2%	12.5%	11.1%	12.5%	13.9%	16.7%	19%
52:Retail trade (not motor veh.) repairs	1.6%	1.4%	1.5%	1.7%	1.8%	1.8%	19%
91:Activ. of membership organisations	3.4%	3.4%	2.5%	2.9%	3.6%	4.3%	17%
90:Sanitation sewage refuse disposal etc.	0.4%	0.3%	0.4%	1.1%	0.5%	0.3%	16%
75:Public admin defence social security	2.3%	2.4%	2.5%	2.7%	2.5%	3.0%	16%
24:Chemicals chemical products man.	3.1%	2.9%	3.3%	4.3%	2.8%	4.0%	15%
20:Wood straw cork wood prods (not furn)	7.6%	8.4%	8.8%	10.5%	8.8%	9.4%	14%
62:Air transport	3.6%	2.6%	1.3%	1.5%	3.1%	3.6%	7%
72:Computer-related activities	8.5%	8.1%	6.5%	8.9%	9.0%	8.6%	6%
30:Office mach. computer manufacture	16.9%	15.2%	15.1%	16.4%	17.3%	16.5%	6%
35:Other transport eqt manufacture	3.9%	3.8%	2.5%	4.2%	4.3%	3.7%	5%
73:Research development	4.5%	6.7%	9.3%	8.8%	7.2%	4.5%	4%
74:Other business activities	3.7%	3.9%	3.6%	3.9%	3.9%	4.0%	4%
85:Health social work	0.7%	0.7%	0.8%	0.8%	0.8%	0.8%	4%
65:Financl intermed (not insur. pensn.)	5.2%	5.5%	5.1%	4.9%	5.4%	5.5%	2%
61:Water transport	1.8%	1.0%	0.9%	1.9%	1.3%	1.6%	1%

Subdivision	2001	2002	2003	2004	2005	2006	% change
51:Wsale commiss. trade (fee contract)	2.1%	2.1%	2.0%	2.4%	2.0%	2.2%	-1%
67:Other financial (not insur. pensn.)	4.4%	4.1%	4.0%	4.1%	4.2%	4.3%	-1%
Embedded share in total employment	**2.52%**	**2.44%**	**2.17%**	**2.47%**	**2.39%**	**2.48%**	**-2%**
28:Fabric-metal prod (not mach. eqt) man.	2.8%	2.7%	1.1%	2.6%	3.2%	2.2%	-2%
60:Transport by land pipeline	0.6%	0.4%	0.5%	0.4%	0.5%	0.6%	-3%
71:Personal hhld mach. eqt rental (no op)	2.5%	2.4%	2.6%	2.1%	2.3%	2.3%	-5%
33:Medical precision optical eqt man.	6.3%	4.3%	4.8%	4.6%	5.3%	4.7%	-6%
80:Education	1.9%	2.1%	1.6%	1.8%	1.8%	1.8%	-7%
22:Printing publishing recorded media	6.9%	6.1%	3.4%	5.4%	5.2%	6.9%	-7%
15:Food beverage manufacture	1.3%	1.3%	1.1%	1.6%	1.1%	1.2%	-8%
64:Post telecommunications	5.7%	4.4%	5.3%	5.0%	4.3%	4.7%	-11%
40:Elec. gas steam etc. supply	4.1%	4.0%	2.9%	4.4%	3.8%	3.3%	-12%
31:Elec. mach eqt manufacture	4.3%	4.1%	2.8%	3.5%	2.9%	4.4%	-13%
45:Construction	1.9%	1.7%	1.3%	1.6%	1.5%	1.5%	-15%
34:Motor veh. trailer etc. manufacture	2.5%	2.4%	1.5%	2.3%	1.6%	2.5%	-16%
25:Rubber plastic products manufacture	2.2%	1.9%	1.5%	2.3%	1.6%	1.8%	-17%
63:Aux. transport activ. travel agents	1.8%	2.0%	1.6%	2.2%	1.6%	1.4%	-21%
93:Other service activities	0.8%	0.7%	0.6%	0.6%	0.4%	0.8%	-22%
66:Insurance pensions (not Social Sec.)	10.3%	7.6%	6.1%	7.9%	7.5%	5.6%	-27%
26:Other non-metallic products man.	14.7%	13.5%	11.5%	10.8%	10.8%	9.0%	-30%
23:Coke petrol prods nuclear fuel man.	6.1%	3.9%	2.4%	5.8%	3.8%	1.8%	-45%
14:Other mining quarrying	2.0%	1.7%	1.7%	0.9%	0.8%	1.2%	-45%
27:Basic metals manufacture	1.6%	1.7%	0.2%	0.9%	0.8%	1.0%	-45%
95:Private hhlds with employed persons	0.2%	0.0%	0.2%	0.1%	0.0%	0.1%	-75%
02:Forestry logging etc.	0.0%	1.7%	2.8%	2.8%	0.4%	0.0%	-77%
16:Tobacco products manufacture	1.6%	7.0%	13.2%	13.5%	1.8%	0.0%	-79%
61:Water transport	2.5%	1.8%	0.9%	1.3%	1.3%	-0.9%	
22:Printing publishing recorded media	6.1%	7.0%	5.7%	5.2%	5.2%	-1.3%	
19:Leather leather goods manufacture	2.3%	5.5%	2.4%	0.8%	0.8%	-3.1%	
12 Mining of uranium and thorium ores	6.5%			0.0%	0.0%	-3.3%	
26:Other non-metallic products man.	14.9%	15.3%	12.5%	11.1%	11.1%	-3.9%	
13:Mining of metal ores	2.3%	8.0%	6.0%	0.0%	0.0%	-5.1%	

Source: Analysis by CCI of custom LFS data tables from the Office for National Statistics

Appendix 15: The use of the Trident methodology with alternative definitions

The Trident methodology can be applied to a full dataset using any well formed definition of occupations and industries classifications. The following is an example of a Cultural Trident generated from a selection of cultural industries and occupations used in the UK 1981, 1991 and 2001 censuses (Table 65).

Table 65: The classifications selected in the Cultural Industries definition and the number of people employed in 1981, 1991 and 2001.

Year	Selected Cultural Industries in use	Total Employed
1981	3452 Gramophone records and pre-recorded tapes	10,700
	4751 Printing and publishing of newspapers	190,260
	4752 Printing and publishing of periodicals	45,640
	4753 Printing and publishing of books	22,180
	4754 Other printing and publishing	470,180
	4920 Musical instruments	8,340
	9711 Film production, distribution and exhibition	38,580
	9741 Radio and television services, theatres, etc.	134,180
	9760 Authors, music composers and other own account artists not elsewhere specified	102,940
	9770 Libraries, museums, art galleries, etc.	113,620
1981 Total		1,136,620

Year	Selected Cultural Industries in use	Total Employed
1991	3452 Gramophone records and pre-recorded tapes	10,400
	4751 Printing and publishing of newspapers	156,240
	4752 Printing and publishing of periodicals	42,380
	4753 Printing and publishing of books	39,660
	4754 Other printing and publishing	480,160
	4920 Musical instruments	8,520
	9711 Film production, distribution and exhibition	48,500
	9741 Radio and television services, theatres, etc.	160,080
	9760 Authors, music composers and other own account artists not elsewhere specified	168,260
	9770 Libraries, museums, art galleries, etc.	140,840
1991 Total		1,255,040
2001	220 Printing and publishing n.o.s.	418
	221 Publishing	355,184
	223 Reproduction of recorded media	7,354
	363 Manufacture of musical instruments	8,298
	920 Recreational, cultural and sporting activities n.o.s.	2,478
	921 Motion picture and video activities	69,684
	922 Radio and television activities	221,296
	923 Other entertainment activities	278,046
	924 News agency activities	35,682
	925 Library, archives, museums and other cultural activities	210,262
2001 Total		1,188,702

Source: CCI analysis of custom census tables from Office for National Statistics

Table 66: The classifications selected as within the Cultural Occupations definition and the number of people employed in 1981.

Year	Selected Cultural Industries in use	Total Employed
1981	271 Archivists and curators	12,120
	380 Authors, writers, journalists	52,710
	381 Artists, commercial artists, graphic designers	32,600
	383 Clothing designers	3,710
	384 Actors, entertainers, stage managers, producers and directors	28,770
	385 Musicians	16,480
	386 Photographers, camera, sound and video equipment operators	32,770
	518 Goldsmiths, silversmiths, precious stone workers	9,190
	525 Radio, TV and video engineers	31,380
	590 Glass product and ceramics makers	23,770
	591 Glass product and ceramic finishers and decorators	22,770
	593 Musical instrument makers, piano tuners	3,330
1981 Total		269,600

Source: CCI analysis of custom census tables from Office for National Statistics

Table 67: The classifications selected as within the Cultural Occupations definition and the number of people employed in 1991.

Year	Selected Cultural Industries in use	Total Employed
1991	270 Librarians	15,180
	271 Archivists and curators	6,160
	380 Authors, writers, journalists	75,680
	381 Artists, commercial artists, graphic designers	82,380
	383 Clothing designers	6,990
	384 Actors, entertainers, stage managers, producers and directors	42,600
	385 Musicians	18,690
	386 Photographers, camera, sound and video equipment operators	36,190
	421 Library assistants/clerks	32,430
	518 Goldsmiths, silversmiths, precious stone workers	8,620
	525 Radio, TV and video engineers	19,660
	590 Glass product and ceramics makers	37,850
	591 Glass product and ceramics finishers and decorators	12,070
	562 Bookbinders and print finishers	13,240
	593 Musical instrument makers, piano tuners	3,880
1991 Total		411,620

Source: CCI analysis of custom census tables from Office for National Statistics

Table 68: The classifications selected as within the Cultural Occupations definition and the number of people employed in 2001.

Year	Selected Cultural Industries in use	Total Employed
2001	2451 Librarians	24,782
	2452 Archivists and curators	8,708
	3411 Artists	24,007
	3412 Authors, writers	44,142
	3413 Actors, entertainers	33,137
	3414 Dancers and choreographers	7,034
	3415 Musicians	26,872
	3416 Arts officers, producers and directors	21,653
	3431 Journalists, newspaper and periodical editors	64,667
	3432 Broadcasting associate professionals	40,309
	3434 Photographers and audio-visual equipment operators	45,130
	3551 Conservation and environmental protection officers	12,779
	4135 Library assistants/clerks	39,293
	5244 TV, video and audio engineers	15,412
	5423 Bookbinders and print finishers	30,903
	5491 Glass and ceramics makers, decorators and finishers	23,135
	5492 Furniture makers, other craft woodworkers	43,521
	5494 Musical instrument makers and tuners	3,158
	5495 Goldsmiths, silversmiths, precious stone workers	6,697
2001 Total		515,339

Table 69: Cultural Trident in 1981 for each segment and mode.

1981	Cultural Employment	Cultural Specialists	Cultural Support	Cultural Industries	Cultural Embedded	Cultural Occupations
Film, TV, Radio and Photography	224,030	12,880	159,880	172,760	51,270	64,150
Music & Performing Arts	133,640	36,920	85,060	121,980	11,660	48,580
Publishing	870,850	35,860	806,020	841,880	28,970	64,830
Visual Arts	92,040	15,560	-	15,560	76,480	92,040
Total Cultural Segment	1,320,560	101,220	1,050,960	1,152,180	168,380	269,600

Source: CCI analysis of custom Census tables from Office for National Statistics

Table 70: Cultural Trident in 1991 for each segment and mode.

1991	Cultural Employment	Cultural Specialists	Cultural Support	Cultural Industries	Cultural Embedded	Cultural Occupations
Film, TV, Radio and Photography	251,040	13,390	195,190	208,580	42,460	55,850
Music & Performing Arts	198,320	54,030	133,150	187,180	11,140	65,170
Publishing	909,950	92,020	767,260	859,280	50,670	142,690
Visual Arts	147,910	42,180	-	42,180	105,730	147,910
Total Cultural Segment	1,507,220	201,620	1,095,600	1,297,220	210,000	411,620

Source: CCI analysis of custom census tables from Office for National Statistics

Table 71: Cultural Trident in 2001 for each segment and mode.

2001	Cultural Employment	Cultural Specialists	Cultural Support	Cultural Industries	Cultural Embedded	Cultural Occupations
Film, TV, Radio and Photography	353,954	59,530	231,450	290,980	62,974	122,504
Music & Performing Arts	324,090	42,287	253,889	296,176	27,914	70,201
Publishing	681,820	101,318	500,228	601,546	80,274	181,592
Visual Arts	141,042	11,754	-	11,754	129,288	141,042
Total Cultural Segment	1,500,906	214,889	985,567	1,200,456	300,450	515,339

Source: CCI analysis of custom census tables from Office for National Statistics

Table 72: Long-run annualised growth in Cultural Trident employment between 1981 and 2001.

Long-run annualised growth 1981 to 2001	Cultural Employment	Cultural Specialists	Cultural Support	Cultural Industries	Cultural Embedded	Cultural Occupations
Film, TV, Radio and Photography	2.3%	8.0%	1.9%	2.6%	1.0%	3.3%
Music & Performing Arts	4.5%	0.7%	5.6%	4.5%	4.5%	1.9%
Publishing	-1.2%	5.3%	-2.4%	-1.7%	5.2%	5.3%
Visual Arts	2.2%	-1.4%	-	-1.4%	2.7%	2.2%
Total Cultural Segment	0.6%	3.8%	-0.3%	0.2%	2.9%	3.3%

Source: CCI analysis of custom census tables from Office for National Statistics

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NESTA

1 Plough Place
London EC4A 1DE
research@nesta.org.uk

www.nesta.org.uk

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