



**University** | Training & Employment  
*of Glasgow* | Research Unit



**EQUALITIES IN SCOTLAND'S GROWTH ECONOMIC SECTORS:  
FINAL REPORT**

(Revised – 8 July 2015)

**Victoria Sutherland, Alan McGregor, Theocharis Kromydas,  
Lynne Macdougall and Alex McTier**

**Training and Employment Research Unit (TERU)  
University of Glasgow  
Adam Smith Business School  
40 Bute Gardens  
Glasgow  
G12 8RT**

**Victoria Sutherland  
Email: [victoria.sutherland@glasgow.ac.uk](mailto:victoria.sutherland@glasgow.ac.uk)  
Tel. 0141 330 4911**

## CONTENTS

	Page No.
<b>Overview: Key Trends and Implications</b>	<b>i</b>
<b>1. Introduction</b>	<b>1</b>
<b>2. Gender Profile of Growth Sectors</b>	<b>4</b>
<b>3. Age Profile of Growth Sectors</b>	<b>25</b>
<b>4. Disability Profile of Growth Sectors</b>	<b>55</b>
<b>5. Ethnic Profile of Growth Sectors</b>	<b>70</b>
<b>6. Other Protected Characteristics in Growth Sectors</b>	<b>89</b>
<b>7. Overview by Growth Sectors</b>	<b>97</b>
<b>Appendix 1: Definitions of Growth Sectors</b>	<b>140</b>
<b>Appendix 2: Allocation of Modern Apprenticeship Frameworks and College Subject Areas to Growth Sectors</b>	<b>145</b>
<b>Appendix 3: Key Indicator Charts</b>	<b>150</b>
<b>Appendix 4: Data Availability</b>	<b>184</b>

## OVERVIEW: KEY TRENDS AND IMPLICATIONS

### Overall Trends

1. This study has examined equality issues in Scotland's growth sectors since 2009, building on an Equality Baseline Report published in 2010. There are no overarching trends – with the representation of individuals with some protected characteristics in the workforce increasing, and declining for others. The picture is also mixed on a sector-by-sector basis, with sectors often making progress on the representation of some equalities groups within their workforce – whilst experiencing a decline in others.
2. A key factor here is likely to be the global economic recession, which commenced in 2008. Evidence from the UK Commission for Employment and Skills<sup>1</sup> suggests the recession has led to an increase in unemployment – with those experiencing disadvantages or suffering discrimination in the labour market hardest hit by rising unemployment. Given the issues faced by many protected characteristics in relation to the labour market, groups such as young people, disabled people and ethnic minorities have experienced disproportionate decreases in employment and increases in unemployment.

### Variation in Trends by Protected Characteristic

3. In relation to **gender**, women are well-represented in the labour force, accounting for 53% of all employees in 2013, but are less well represented within the self-employed and among company directors (accounting for 35% and 31% respectively). The proportion of employees and self-employed that are women has increased between 2009 and 2013. Whilst women are well-represented within the labour market, they are much more likely to work part-time than men (accounting for 80% of all part-time employees) and pay gaps and the concentration of women within particular occupations continue to be significant issues.
4. In terms of **age**:
  - The proportion of the workforce which is aged 16-25 has declined slightly between 2009 and 2013 from 11.8% to 11.5%. Over this same time period, the proportion of young people working part-time has increased, as have the numbers self-employed (although this remains very low). Combined, these trends point to the challenges young people have faced in the labour market as a result of the recession, with unemployment having increased significantly for this group. The key factor here is the lack of experience and skills disadvantaging young people compared to other jobseekers in a time of rising unemployment.
  - In contrast, the proportion of employees aged 55 and over has increased from 18.5% in 2009 to 20.6% in 2013. There are a number of factors that are likely to underpin this – the removal of the statutory retirement age, changing cultural norms in terms of retirement and

---

<sup>1</sup> UKCES (2014). *The Labour Market Story: The UK Following Recession*.

increasing budget constraints forcing some individuals to stay in the labour market longer and the growing proportion of the population aged 55 and over.

5. Whilst the Annual Population Survey does not contain data on **disabilities**, it does contain data on those experiencing health problems lasting more than 12 months. In 2013, 25% of employees had a health problem that had lasted more than 12 months, as did 33% of the self-employed. The proportion of employees and self-employed with a health problem lasting more than 12 months increased between 2009 and 2013. Broader evidence suggests that disabled people – especially those with more severe disabilities – struggle to access good quality employment opportunities and experience pay gaps compared to those without disabilities.
6. **Ethnic minorities** appear to be under-represented amongst both employees and the self-employed – accounting for 2% of both groups compared to 4% of working age population. There was no change in the proportion of employees from ethnic minorities between 2009 and 2013 – and the proportion self-employed declined over this time period. In addition, evidence suggests that some ethnic minority groups face a pay gap compared to those in the ‘white British’ category and that this group continues to face barriers to employment. Only 1% of Modern Apprenticeship starts are ethnic minorities. MAs are a key mechanism for developing the skills required by the Scottish economy, and therefore it is important that ethnic minorities are accessing these.
7. There is no data on the representation of individuals going through or who have already gone through **gender reassignment** in the Scottish workforce. The main organisation working with this group in Scotland – the Scottish Transgender Alliance – identified a number of barriers that this group experienced in the labour market including hostility, bullying and the unwillingness of employers to have transgender people in frontline (customer-facing) roles for fear of how the organisation will be perceived. However, they felt that there have been improvements over the last 5 years as a result of a number of high profile cases of gender reassignment.
8. Overall, the number of married employees has declined between 2009 and 2013. There is no evidence to suggest that **marital status** of an individual has an impact on their employment prospects.
9. There is no data on **maternity and pregnancy**. Whilst maternity and paternity rights are generally respected by employers, organisational norms can prevent fathers from taking their full paternity entitlement. The Family Friendly Network Scotland highlighted that there is also often an issue once parents return to work, with many employers unable or unwilling to consider more flexible working patterns.
10. There has been a big increase between 2009 and 2013 in the proportion of employees saying they have no **religion** – from 23% to 41%. For those with a religion, the largest group in 2013 was Protestant (accounting for 31% of employees), followed by Roman Catholic (15%) and other Christian (10%). 3% of employees had another religion.

11. Again, there is no data on representation within the workforce by **sexual orientation**. Research by Metcalf and Rolfe<sup>2</sup> found that it was more difficult to create a lesbian, gay, bisexual and transgender friendly workplace in male-dominated environments - an interesting finding when considered alongside the gender split of the growth sectors discussed earlier.

### Variation in Trends by Growth Sector

12. The **creative industries** appears to be one of the growth sectors that is most open to individuals with protected characteristics – with women accounting for 50% of employees and 49% of the self-employed (which whilst a marginal underrepresentation compared to the female workforce as a whole is high compared to many other growth sectors), young people accounting for 11% of employees and 26% of employees having a health problem lasting more than 12 months. For most protected characteristics, their representation in the creative industries has grown between 2009 and 2013. One key exception to this is ethnic minorities – with only 1.4% of employees and 1.6% of the self-employed in the sector coming from an ethnic minority group. As well as being underrepresented, there is evidence of ethnic minorities being concentrated in particular occupations within the sector. The underrepresentation of this group within the sector has been recognised by Skillset, one of the Sector Skills Councils covering the sector, which has made recommendations to increase participation. Another potential area for concern is the low numbers of females progressing into management roles.

13. All of the groups examined in this study are underrepresented in the **energy** sector, except older workers. This is particularly marked for women who account for just 19% of employees and 9% of the self-employed in the sector. Notably, the proportion of employees and self-employed that are female has declined between 2009 and 2013 – and there were also declines in the proportion of young people and those with a health problem lasting more than 12 months employed in the sector. Whilst ethnic minorities remain underrepresented within the sector's employees, there has been an increase in their representation between 2009 and 2013 and they are over-represented within the self-employed in this sector. Key barriers to entry to this sector appear to relate to subject choice, reliance on networking for recruitment and the attractiveness of the sector to particular groups. There is also some evidence of women being concentrated in particular kind of roles (mainly administrative and secretarial roles, with some evidence that only 10% of jobs in development and supply chain activities for the renewable energy sector are held by women).

14. There is good representation of individuals with protected characteristics in the **financial and business services** and for most groups, their representation has increased between 2009 and 2013. For example, women accounted for 56% of employees in 2013 and ethnic minority groups accounted for 2.7%. However, issues remain with this sector as it has the largest gender pay gap and women being concentrated in particular roles, especially administrative and secretarial roles.

---

<sup>2</sup> Metcalf, H. and Rolfe, H. (2011). Barriers to Employers Developing Lesbian, Gay, Bisexual and Transgender-Friendly Workplaces.

15. Two groups are over-represented in relation to the **food and drink** sector – young people (who account for 14% of employees) and those identifying their ethnicity as white Polish (9% of employees). The second group is particularly notable as it is an indication of the sector's role as an employer of recent migrants. In contrast, women are under-represented in the sector accounting for just 32% of employees. Whilst the gender pay gap is low in this sector, this is likely to reflect the low wages within the sector. Whilst older workers are under-represented amongst the sector's employees, almost 50% of the self-employed are aged 55 and over – the joint highest of all growth sectors. This is likely to reflect the farming community – with concerns about the ageing of the group.
16. Women are over-represented within the **life sciences** workforce – accounting for 61% of employees in 2013. This is a substantial increase on the 2009 rate of 49%. However, there is a range of evidence that indicates that women find it difficult to progress within the sector (with long working hours, a lack of flexible working and a lack of access to research funding all contributing factors to this lack of progress). This is borne out by the small proportion of company directors that are female (just 17%). Other protected characteristics are generally underrepresented within the sector – although in the case of young people, this is likely to reflect the qualification requirements (graduate level or higher) of most jobs.
17. Young people account for 34% of employees in **tourism**. Women, ethnic minorities and individuals from a white Polish background are also overrepresented. There is a mixed picture over time – with, for example, the proportion of female employees and employees from an ethnic minority increasing between 2009 and 2013 but the proportion aged under 25, over 55 or have a health problem lasting more than 12 months declining. Individuals aged 55 and over account for almost 50% of those that are self-employed in the sector. This is likely to reflect both the capital investment needed for many tourism businesses (and the greater access to finance amongst older age groups) alongside the nature of the sector with many 'lifestyle' businesses established by older career changers. A key issue for the sector is that whilst women are overrepresented, they are concentrated within particular sub-sectors and occupations and can struggle to reach senior roles.
18. Most protected characteristics are well represented within the **universities**, with 62% of employees female, 24% aged over 55, 22% having a health problem lasting more than 12 months and 4% coming from an ethnic minority group. There has been an increase in the proportion of women and older people in the sector since 2009, and declines in the proportion with a health problem lasting more than 12 months and from an ethnic minority group. The one group that is significantly underrepresented is young people, who account for just 3% of employees in the sector. The strong performance on ethnicity is likely to reflect the international nature of the labour market for academic posts. Another equality issue facing the sector is continued gender split within the sector with women more likely to be in support roles and, amongst those in academic posts, less likely to be in senior positions.

19. Women, young people and older people are all under-represented within **chemical sciences**. Ethnic minorities are also underrepresented – although the proportion employed in chemical sciences is higher than across the economy as a whole. The survey sample size means that data is limited for 2009 for this sector, but there has been an increase in the proportion of the workforce which is female, and a decline in the proportion aged over 55 since 2009. Whilst there is limited evidence on trends for the sector in relation to equalities issues, it faces many of the same issues as other sectors relating to STEM – with key issues being how to attract and retain women given the length of time it takes to develop skills, a lack of job security, long and irregular working hours and a lack of processes and procedures that enable the balancing of work and caring responsibilities. A key issue for disabled people is accessing the funding to develop the skills required for careers in STEM subjects.
20. The age profile of the **construction** industry is similar to economy as a whole – but women and ethnic minorities are underrepresented. Women accounted for just 17% of the workforce in 2013, although this was an improvement on the 2009 figure. Ethnic minorities accounted for just 0.7% of the construction workforce in 2013, the same proportion as in 2009. Reasons for the low representation of ethnic minorities within the sector include the low status of the sector amongst ethnic minority communities, a lack of awareness of the range of roles in the sector, word-of-mouth recruitment practices and negative perceptions of the sector. There is also some evidence of a ‘glass ceiling’ in relation to promotion to more senior roles for ethnic minorities. Individuals from ‘white Polish’ backgrounds account for 1.1% of construction employees.
21. Women are underrepresented within **engineering**, accounting for just 18% of employees in 2013. There had been a small decline in the proportion of employees in the sector that are female between 2009 and 2013. The issues women face in accessing and progressing within careers in engineering are similar to those faced in relation to energy and chemical sciences (with a significant overlap in terms of both the skills needed by these sectors and operating practices). Women account for a small proportion of those undertaking Modern Apprenticeships and college or university courses in engineering. In contrast older people are overrepresented in the sector – both as employees and self-employed – but the numbers have decreased between 2009 and 2013. Ethnic minorities are underrepresented but there has been significant improvement in their representation between 2009 and 2013. A further 1.4% of the workforce is white Polish.
22. Women, young people and older people are all underrepresented in the **ICT and digital technologies** sector, whilst those with long-term health problem are overrepresented. The sector also has one of the highest proportions of ethnic minorities – with 3.5% of employees coming from an ethnic minority background. Whilst progress has been made in relation to the representation of many protected characteristics within the sector, the representation of women and ethnic minorities declined between 2009 and 2013. In relation to women there has also been a decline in the numbers undertaking Modern Apprenticeships and college and university courses related to this sector. Whilst ICT and digital technologies as a sector are being affected by many of the same issues as others that draw on STEM subjects, it is unusual in that individuals with protected characteristics appear to becoming less common over time.

## Implications

23. Scottish Government identified a range of growth sectors in its initial *Government Economic Strategy* (launched in 2007) and refined these in the refreshed 2011 Strategy. The sectors were selected because they were expected to be strategically important to the Scottish economy – and in particular because of their ability to generate employment opportunities and/or high value jobs. *Scotland's Economic Strategy* (launched in March 2015) puts a much stronger emphasis on reducing inequality. It is important that individuals from protected characteristics are able to access the good quality employment opportunities that the growth sectors offer.
- Where groups are underrepresented, efforts must be made to tackle this underrepresentation.
  - A key element of this must be to ensure better representation of individuals with protected characteristics on Modern Apprenticeships, and on college or university courses, that lead to careers in these sectors.
  - However, increasing representation of protected characteristics within the sector is not sufficient. Efforts must also be deployed to tackling pay gaps, occupational segregation and the lack of progression into management and leadership roles.
24. As identified in Skills Development Scotland's Skills Investment Plans (SIPs) and the Sector Skills Assessments (SSAs) developed by UK Commission for Employment and Skills (UKCES) and Sector Skills Councils, many of the growth sectors are facing skills shortages. Their failure to attract, retain and develop individuals with protected characteristics is likely to be exacerbating these – and therefore there is also a compelling argument for the sectors to be exploring how they can be attracting individuals with a broader range of characteristics. Notably many of the SIPs and SSAs recognise the need to attract more women to their sector, but attracting more individuals from other protected characteristics (especially disabled people) is much less common.
25. The representation of individuals from equalities groups varies across growth sectors, the trends over time vary by sector and where individuals from an equality group are employed, their experiences vary across sectors. As such, there is a need to customise responses by sector.



## 1. INTRODUCTION

### Background

In the *Government Economic Strategy*, the Scottish Government set out 7 key growth sectors that it believes will be central to the growth of the Scottish economy. The sectors identified are creative industries (including digital); energy (including renewables); financial and business services; food and drink; life sciences; sustainable tourism; and universities. Policy and interventions in the business and skills development fields are increasingly focused on these sectors – with, for example, Scottish Enterprise and Highlands and Islands Enterprise efforts focused on these key sectors and Skills Development Scotland leading the development of Skills Investments Plans for each of these growth sector. Looking beyond these 7 growth sectors, Scottish Enterprise has also identified 4 other sectors that play a key role in the Scottish economy and that would benefit from sectoral support – construction; chemical sciences; engineering; and ICT and digital technologies.

The Equality Act 2010 refreshed the legislative framework for equalities across the UK. It sets out 9 protected characteristics:

- Age.
- Disability.
- Gender reassignment.
- Maternity and pregnancy.
- Marriage and civil partnership.
- Race.
- Religion.
- Sex (referred to in this report as gender).
- Sexual orientation.

As part of this, key duties have been placed on Scottish public bodies, including setting equalities outcomes, publishing data on progress against these outcomes and undertaking reviews of policy and practice in relation to equalities. Given the importance placed on supporting key growth sectors in the *Government Economic Strategy*, many of the equalities outcomes set by Scottish Enterprise, Highlands and Islands Enterprise and Skills Development Scotland relate to the growth sectors.

Achieving equality and diversity across the key sectors is important given that research has found that there are significant business benefits from equality and diversity<sup>3</sup> – including lower labour turnover, higher levels of commitment and motivation amongst employees, improved reputation (amongst customers and potential employees), better understanding of customer needs and more flexibility and creativity within the business from the increased range of perspectives, skills and capabilities. All of these are critical in helping the key sectors achieving their growth potential. However, research<sup>4</sup> has shown that equality and diversity varies significantly across sectors. In addition, recent research by

---

<sup>3</sup> BIS (2013). *The Business Case for Equality and Diversity* and CBI (2014). *Building on Progress: Boosting Diversity in Our Workplaces*.

<sup>4</sup> Blake Stevenson (2010). *Equality and Diversity Baseline Information on Scotland's Key Economic Sectors* and Sosenko, F. (2013). *Analysis of Industry Statements on Skills Needs and Shortages*.

BIS<sup>5</sup> has found that not all businesses have benefited from equality and diversity – with the markets the firm operates in, the firm’s strategic approach, labour market, the skills and capabilities of its managers and the approach used to manage diversity all having an impact on whether these business benefits come through. Combined, this suggests that more needs to be done both to embed equality and diversity in key sectors and to ensure that the benefits of doing so are maximised for businesses within those sectors.

### Brief

In light of these issues, Scottish Enterprise (SE), on behalf of, Highlands and Islands Enterprise (HIE) and Skills Development Scotland (SDS) and, with support from the Equality and Human Rights Commission (EHRC), has commissioned this research on the representation of the protected characteristics outlined in the Equality Act 2010 in the growth sectors. In doing so, it updates the Equality Baseline undertaken in 2010 and will help them report on progress against the equality outcomes they have established in response to their obligations under the Scottish Specific Duties of the Equality Act 2010.

### Methodology

The study has:

- Analysed the Annual Population Survey (APS) to establish the representation of individuals with protected characteristic in each growth sector. The APS provides data on both employees (including a split by full-time/part-time) and self-employment.
- Analysed the FAME database to establish the representation of women, young people and older people within company directors across the growth sectors.
- Analysed data from Skills Development Scotland and Scottish Funding Council on the supply of labour into the growth sectors from the protected characteristics, in terms of Modern Apprenticeship starts, college enrolments and university entrants.
- Summarised the key research that has been published since 2010 on the representation of protected characteristics in the growth sectors and, where available, the factors that are driving this.
- Gathered the perspectives of a small number of organisations that work with individuals with protected characteristics (including BEMIS, Capability Scotland, Close the Gap, Equate Scotland, Family Friendly Network Scotland, Migrant Voice, Scottish Transgender Alliance, The Age and Employment Network (TAEN) and Women’s Enterprise Scotland) to supplement the desk-based research where there is no or limited data or literature available.

The Annual Population Survey data is only presented where there are 30 or more cases in scope – as analysis using fewer than 30 cannot be considered robust. This mainly affects data for the Highlands and Islands and the smaller sectors (such as life sciences and chemical sciences). As different individuals were surveyed in 2009 and 2013, and given the random nature of the sample, data is sometimes available for a sector or geography for 2009 but not 2013 or vice-versa. Whilst changes are identified, these have not been tested for statistical significance – and are provided solely to provide the reader with an indication of broad trends. Data for Modern Apprenticeships, college enrolments and university entrants is provided regardless of the number of cases – as these are counts rather than a sample.

---

<sup>5</sup> BIS (2013). *The Business Case for Equality and Diversity*.

## Structure of Report

The structure of this report is as follows.

- Chapter 2 provides the gender profile of the growth sectors.
- Chapter 3 examines the age profile of the growth sectors.
- Chapter 4 assesses the disability profile of the growth sectors.
- Chapter 5 examines the ethnic profile of the growth sectors.
- Chapter 6 summarises the evidence on the representation of other protected characteristics in the growth sectors.
- Chapter 7 provides an overview of the research findings by growth sector.

## 2. GENDER PROFILE OF GROWTH SECTORS

### Introduction

Females account for 51% of working age population (2011 Census). Within the Scottish Enterprise area, they account for 51% of the working age population, whilst in the Highlands and Islands area, they account for 50% of the working age population. The Census also found that females account for:

- 53% of employees
- 35% of the self-employed.

### Employment

Figure 1 shows the proportion of employees in each growth sector that are female. In 2013, females were:

- Over-represented within financial and business services, life sciences, tourism, universities, compared to the economy as a whole.
- Under-represented within energy, food and drink, chemical sciences, construction, engineering and ICT and digital technologies.
- The representation of women within these sectors is broadly similar across Scottish Enterprise and Highlands and Islands Enterprise areas as Scotland as a whole.

Since 2009:

- The proportion of employees that are female has increased in creative industries, food and drink, life sciences, tourism, universities, chemical sciences and construction. In most cases, the increases have been by a few percentage points, a relatively large increase over 4 years. Particular large increases have been observed in relation to creative industries (from 44% to 50%), life sciences (from 49% to 61%) and universities (from 56% to 62%).
- The proportion of employees that are female has decreased within energy, financial and business services, engineering and ICT and digital technologies. With the exception of financial and business services, these are all sectors where females were already under-represented within the employee base.
- A similar pattern of changes is observed in the Scottish Enterprise area. Whilst there are some differences in the Highlands and Islands Enterprise area compared to the Scottish picture, these are likely to be due to the relatively small sample sizes involved.

**Figure 1: Female Employees as % of Total Employees in Growth Sectors, 2009 and 2013**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>GES growth sectors</b>									
• Creative industries	44.2	50.3	↑	41.4	49.4	↑	73.3	-	-
• Energy	23.8	19.2	↓	25.0	22.3	↓	15.7	5.3	↓
• Financial and business services	57.0	56.2	↓	57.0	56.4	↓	57.3	51.5	↓
• Food and drink	29.3	31.7	↑	33.3	32.1	↓	17.1	30.5	↑
• Life sciences	48.8	60.9	↑	51.4	63.3	↑	-	-	
• Sustainable tourism	55.3	57.3	↑	54.7	57.9	↑	58.9	53.6	↓
• Universities	55.8	61.7	↑	57.1	61.3	↑	-	-	-
<b>Other growth sectors</b>									
• Chemical sciences	25.5	28.5	↑	26.7	31.6	↑	-	-	
• Construction	14.7	17.2	↑	15.2	16.7	↑	11.4	20.3	↑
• Engineering	18.7	18.1	↓	18.1	18.5	↑	24.4	14.1	↓
• ICT and digital technologies	21.7	19.4	↓	21.1	17.9	↓	-	-	-
<b>All industries</b>	52.0	52.5	↑	52.2	52.7	↑	50.2	51.2	↑

Source: Annual Population Survey

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of females between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of females between 2009 and 2013.

In 2013, 43% of female employment in Scotland was part-time. Part-time employment amongst women was more common in the Highlands and Islands area (accounting for 51% of all female employment) than in the Scottish Enterprise area (42%). Looking across the growth sectors:

- In most growth sectors, part-time employment accounted for a smaller proportion of female employment than in the economy as a whole. For example, part-time employment accounted for 8% of female employment in chemical sciences, 15% in ICT and digital technologies, 23% in life sciences, 27% in energy and 33% in financial and business services.
- The key exceptions to this are the creative industries – where part-time employment accounts for 49% of female employment – and tourism where it accounts for 58%.
- The profile of female part-time employment is broadly similar in the Scottish Enterprise area to Scotland as a whole. For most growth sectors, the sample sizes for the Highlands and Islands Enterprise area are too small to calculate robust statistics.
- In terms of change over time, the proportion of female employment which is part-time has increased slightly. Creative industries, energy, food and drink, chemical sciences and construction have all seen an increase in the proportion of female employment which is part-time, whilst the other growth sectors have experienced declines.

**Figure 2: Female Part-time Employees as % of Female Employees in Growth Sectors, 2009 and 2013**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>GES growth sectors</b>									
• Creative industries	45.8	49.0	↑	44.4	47.7	↑	-	-	-
• Energy	25.7	27.1	↑	25.2	25.0	↓	-	-	-
• Financial and business services	34.5	32.3	↓	34.0	31.5	↓	40.7	47.1	↑
• Food and drink	24.2	25.5	↑	24.1	22.0	↓	-	36.1	-
• Life sciences	25.4	23.2	↓	25.5	24.0	↓	-	-	-
• Sustainable tourism	58.7	58.4	↓	59.0	59.1	↑	57.3	54.1	↓
• Universities	36.9	35.3	↓	37.6	34.6	↓	-	-	-
<b>Other growth sectors</b>									
• Chemical sciences	5.4	8.1	↑	5.6	8.1	↑	-	-	-
• Construction	28.5	32.3	↑	30.0	31.0	↑	-	-	-
• Engineering	23.1	19.5	↓	20.5	18.5	↓	-	-	-
• ICT and digital technologies	30.0	15.2	↓	-	-	-	-	-	-
<b>All industries</b>	42.6	43.2	↑	41.8	42.2	↑	48.9	50.6	↑

Source: Annual Population Survey

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of females between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of females between 2009 and 2013.

Females account for 80% of all individuals that are employed on a part-time basis.

- Females account for over 80% of those that are employed part-time in financial and business services (87%), creative industries (84%) and universities (81%).
- Females account for just 62% of those employed part-time in engineering and 65% in food and drink. Whilst this is still significantly above their share of the workforce as a whole, this rate is considerably below the 80% average for all industries.
- There is a mixed picture in terms of change over time, with the proportion of part-time employees that are female increasing in some growth sectors and declining in others.

**Figure 3: Female Part-time Employees as % of Part-time Employees in Growth Sectors, 2009 and 2013**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>GES growth sectors</b>									
• Creative industries	79.8	83.5	↑	76.6	82.4	↑	-	-	-
• Energy	80.9	74.4	↓	85.0	82.4	↓	-	-	-
• Financial and business services	85.5	86.6	↑	86.8	86.8	-	75.0	-	-
• Food and drink	64.5	64.9	↑	68.0	58.5	↓	-	-	-
• Life sciences	-	-	-	-	-	-	-	-	-
• Sustainable tourism	70.1	72.1	↑	68.6	72.9	↑	78.7	66.7	↓
• Universities	74.3	80.5	↑	76.3	80.5	↑	-	-	-
<b>Other growth sectors</b>									
• Chemical sciences	-	-	-	-	-	-	-	-	-
• Construction	77.3	74.6	↓	84.2	74.1	↓	-	-	-
• Engineering	67.8	61.9	↓	68.9	63.9	↓	-	-	-
• ICT and digital technologies	-	-	-	-	-	-	-	-	-
<b>All industries</b>	81.5	80.3	↓	81.4	80.0	↓	82.6	82.0	↓

Source: Annual Population Survey

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of females between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of females between 2009 and 2013.



## Self-Employment

Across the Scottish economy as a whole, females accounted for 35% of the self-employed in 2013. Looking at the growth sectors:

- Females account for 49% of the self-employed in the creative industries and 51% in tourism.
- In all other sectors, they are under-represented. There are particularly low levels of female self-employment in energy (where they account for just 9% of self-employed), construction (5%), engineering (15%) and ICT and digital technologies (11%).
- The profile of female self-employment in the Scottish Enterprise and Highlands and Islands Enterprise areas is broadly similar to that in Scotland as a whole.

Since 2009:

- The proportion of self-employment people that are female has increased in the creative industries, financial and business services, food and drink, tourism and construction, whilst declining in energy, engineering and ICT and digital technologies.
- The decline in ICT and digital technologies is particularly concerning as it represents a decline of almost a half.
- There is no clear pattern of change across Scottish Enterprise and Highlands and Islands areas, although there are increases in the representation of women within the self-employed in food and drink, tourism and construction in each region.

**Figure 4: Female Self-employment as % of Total Self-employment in Growth Sectors, 2009 and 2013**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>GES growth sectors</b>									
• Creative industries	41.1	48.6	↑	38.6	47.8	↑	53.3	-	-
• Energy	12.0	8.8	↓	11.9	7.4	↓	-	-	-
• Financial and business services	31.0	31.9	↑	31.8	30.6	↓	-	-	-
• Food and drink	17.2	20.1	↑	17.6	19.6	↑	16.2	21.1	↑
• Life sciences	-	-	-	-	-	-	-	-	-
• Sustainable tourism	50.3	50.9	↑	47.9	47.3	↓	57.1	59.2	↑
• Universities	-	-	-	-	-	-	-	-	-
<b>Other growth sectors</b>									
• Chemical sciences	-	-	-	-	-	-	-	-	-
• Construction	2.3	4.5	↑	2.4	4.5	↑	1.6	4.2	↑
• Engineering	16.0	15.2	↓	18.0	14.0	↓	-	-	-
• ICT and digital technologies	19.4	11.4	↓	21.9	11.6	↓	-	-	-
<b>All industries</b>	31.8	34.6	↑	31.4	34.3	↑	33.6	35.8	↑

Source: Annual Population Survey

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of females between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of females between 2009 and 2013.

### Modern Apprenticeships

Modern Apprenticeship data is available by Framework – such as ‘construction’ or ‘hospitality’. As such the numbers presented in Figure 5 below – and in the tables in subsequent chapters – reflect those pursuing MAs in occupational areas that can be aligned to particular growth sectors. A full list of the frameworks that have been allocated to each growth sector are given in Appendix 2. There will be some within these numbers working within other sectors (for example, individuals pursuing a construction MA but employed by a local authority) and others pursuing other MA frameworks (such as ‘business and administration’ or ‘management’) within the growth sectors. In 2013/14, 41% of Modern Apprenticeship starts were female.

- Females are over-represented in MA starts in financial and business services and tourism.
- Females account for less than 10% of MA starts in energy, chemical sciences and engineering.
- Since 2009/10, there has been substantial growth in the proportion of MA starts that are female in frameworks relevant to the energy and food and drink sectors.
- There has been a decline in the proportion of female MA starts in creative industries and ICT and digital technologies.

**Figure 5: Female Modern Apprenticeship Starts as % of Total Modern Apprenticeship Starts by Growth Sector, Scotland, 2009/10 to 2013/14**

	2009/10	2010/11	2011/12	2012/13	2013/14	Change 2009/10 – 2013/14
<b>GES growth sectors</b>						
• Creative industries	50.0	54.7	42.9	53.7	47.5	↓
• Energy	1.4	2.4	4.0	3.4	7.7	↑
• Financial and business services	54.3	60.5	66.8	53.0	57.3	↑
• Food and drink	21.4	28.6	32.1	38.5	41.0	↑
• Life sciences	45.5	42.6	31.6	57.1	50.0	↑
• Sustainable tourism	53.1	55.4	57.3	56.8	56.2	↑
• Universities	-	-	-	-	-	-
<b>Other growth sectors</b>						
• Chemical sciences	23.8	75.0	25.0	-	-	-
• Construction	1.6	1.4	1.4	2.2	2.1	↑
• Engineering	3.6	3.3	2.8	3.9	4.7	↑
• ICT and digital technologies	46.3	14.9	19.8	16.5	14.0	↓
<b>All Modern Apprenticeships</b>	41.9	44.8	43.1	43.0	41.3	↓

Source: Skills Development Scotland

Notes:

- There are no MAs that specifically relate to universities.
- Appendix 2 provides details of which frameworks have been allocated to each growth sector.
- ↑: Sectors where there has been an increase in the representation of females between 2009/10 and 2013/14.
- ↓: Sectors where there has been a decrease in the representation of females between 2009/10 and 2013/14.

## Business Leadership

The FAME database holds details of all companies registered in the UK. At the end of 2014:

- 31% of company directors in Scotland were female, with a similar rate in Scottish Enterprise. The rate was slightly higher in the Highlands and Islands Enterprise area – at 35%.
- Females account for between 27% and 33% of directors in all growth sectors except life sciences (where the rate is 17%) and chemical sciences (24%).

As FAME is a 'live' database, it is not possible to analyse change over time. However, if Scottish Enterprise, Highlands and Islands Enterprise and Skills Development Scotland were to commit to extract data on an annual basis (e.g. in December of each year), it would be possible to begin to compare change over time.

**Figure 6: Female Directors as % of All Directors by Growth Sectors, 2014**

	Scotland	Scottish Enterprise	Highlands and Islands Enterprise
<b>GES growth sectors</b>			
• Creative industries	33.1	32.6	39.3
• Energy	29.4	29.2	31.0
• Financial and business services	32.4	32.3	34.4
• Food and drink	31.4	31.9	29.9
• Life sciences	17.1	17.1	17.4
• Sustainable tourism	31.5	30.6	36.3
• Universities	30.9	28.4	38.3
<b>Other growth sectors</b>			
• Chemical sciences	23.9	22.9	43.3
• Construction	27.3	26.9	30.7
• Engineering	29.3	29.0	31.9
• ICT and digital technologies	28.8	28.7	31.8
<b>All industries</b>	30.8	30.3	34.6

Source: Financial Analysis Made Easy (FAME) database

Notes:

- Data extracted December 2014/January 2015.
- FAME is a 'live' database so it is not possible to undertake an analysis over time.

Looking at the FAME data in another way, 49% of all companies based in Scotland have at least one female director. Again, a similar proportion is observed in the Scottish Enterprise area – but the rate is much higher in the Highlands and Islands at 57%. This may be due to a higher proportion of family firms within this locality. In relation to the growth sectors:

- In most growth sectors, at least 50% of companies have a female director. The exceptions to this are life sciences (where only 40% of firms have a female director), construction, engineering and ICT and digital technologies.
- Universities and food and drink companies are most likely to have a female director, with 63% and 62% respectively having at least one female director.
- The pattern of female directorships appears to be very similar across Scottish Enterprise as in Scotland as a whole. In the Highlands and Islands Enterprise area, most growth sectors have a slightly higher rate of female directorships – but this is particularly marked in relation to creative industries, tourism and chemical sciences.

**Figure 7: % of Companies in Growth Sectors with At Least One Female Director, 2014**

	Scotland	Scottish Enterprise	Highlands and Islands Enterprise
<b>GES growth sectors</b>			
• Creative industries	53.8	53.1	64.3
• Energy	51.1	50.9	53.4
• Financial and business services	53.2	54.0	56.8
• Food and drink	62.4	62.0	63.3
• Life sciences	39.8	39.9	43.2
• Sustainable tourism	51.3	49.4	65.7
• Universities	63.0	58.6	-
<b>Other growth sectors</b>			
• Chemical sciences	51.3	50.8	58.3
• Construction	47.2	46.6	51.7
• Engineering	48.5	48.5	48.6
• ICT and digital technologies	46.2	45.9	53.0
<b>All industries</b>	48.7	48.0	57.2

Source: Financial Analysis Made Easy (FAME) database

Notes:

- Data extracted December 2014/January 2015.
- FAME is a 'live' database so it is not possible to undertake an analysis over time.

## Education and Training

### *College Enrolments*

Looking at the inflow of labour into the growth sectors, we will consider:

- College enrolments.
- University entrants.

As numbers can vary dramatically on a year-by-year basis, we have included trend data.

Females accounted for 52% of all college enrolments in 2012/13, a similar proportion to earlier years. To analyse on a sector-by-sector basis, subjects have been allocated to growth sectors on the basis of the knowledge and skills they develop (for example, those studying 'energy economics/management/conservation' and 'oil and gas operations' have been allocated to energy). A full list of the subjects that have been allocated to each growth sector are given in Appendix 2. However, it should be noted that not all individuals that study these subjects will progress into employment in the growth sector.

- Females are over-represented in enrolments in subjects relevant to creative industries, financial and business services, life sciences and tourism. In contrast, they account for only a very small proportion of enrolments in subjects relevant to energy (9%), construction (7%) and engineering (12%).
- The profile of enrolment appears to have remained broadly constant between 2010/11 and 2012/13 – but there have been declines in the proportion of female enrolments in subjects relevant to energy, financial and business services, chemical sciences, engineering and ICT and digital technologies.
- The profile of enrolments is similar across Scotland, Scottish Enterprise and the Highlands and Islands Enterprise areas – although females account for a higher proportion of enrolments in subjects relevant to financial and business services and ICT and digital technologies in the Highlands and Islands.

**Figure 8: Female Enrolments as % of Total College Enrolments by Growth Sector, Scotland, 2010/11 to 2012/13**

	Scotland				Scottish Enterprise				Highlands and Islands Enterprise			
	2010/11	2011/12	2012/13	Change 2010/11-2012/13	2010/11	2011/12	2012/13	Change 2010/11-2012/13	2010/11	2011/12	2012/13	Change 2010/11-2012/13
<b>GES growth sectors</b>												
• Creative industries	61.4	62.1	63.5	↑	61.0	61.4	63.1	↑	67.3	70.0	68.3	↑
• Energy	13.8	7.8	8.9	↓	14.2	8.0	8.5	↓	0.0	14.7	11.3	↑
• Financial and business services	70.7	68.7	65.1	↓	70.6	68.5	64.9	↓	77.9	83.7	83.8	↑
• Food and drink	51.1	52.1	51.6	↑	50.8	51.4	50.6	↓	54.1	59.5	57.0	↑
• Life sciences	73.1	70.9	72.0	↓	72.8	70.7	72.0	↓	84.8	81.5	71.7	↓
• Sustainable tourism	60.1	59.2	61.7	↑	60.0	58.5	60.7	-	61.2	64.2	68.2	↑
• Universities	-	-	-	-	-	-	-	-	-	-	-	-
<b>Other growth sectors</b>												
• Chemical sciences	46.9	45.9	40.5	↓	46.9	45.8	40.7	↓	45.5	50.0	35.3	↓
• Construction	7.4	8.1	6.9	↓	7.6	8.5	7.3	↓	6.5	4.9	4.0	↓
• Engineering	15.4	11.1	11.8	↓	15.9	11.3	12.2	↓	5.6	7.0	5.5	↓
• ICT and digital technologies	52.8	49.6	46.0	↓	51.5	48.4	44.9	↓	65.3	63.5	60.2	↓
<b>All subjects</b>	53.6	53.1	52.4	↓	53.5	53.0	52.3	↓	55.1	54.4	53.0	↓

Source: Scottish Funding Council Infact Database

Notes:

- There are no college courses that specifically relate to universities.
- Appendix 2 provides details of which subjects have been allocated to each growth sector.
- ↑: Sectors where there has been an increase in the representation of females between 2010/11 and 2012/13.
- ↓: Sectors where there has been a decrease in the representation of females between 2010/11 and 2012/13.



### University Entrants

Data is not available on the numbers enrolling in individual subjects – but the Scottish Funding Council does provide data on the gender breakdown for broad subject areas. These are ‘grouped’ under the growth sectors for which they have the greatest relevance. Overall, 60% of Scottish-domiciled entrants to universities in 2012/13 were female. However, in relation to many of the subjects that would lead to careers in the growth sectors, they are under-represented. For example, females account for just 14% of entrants into engineering courses and 24% of those entering courses in mathematical and computer sciences. The proportion of female students within each subject area has stayed broadly similar across the last 4 years – suggesting no major inroads are being made into changing the gendered nature of subject choice. The one exception to this is 2010/11 when there appeared to be a large increase in the number of females entering engineering courses – although this decreased again the following year.

**Figure 9: Females as % of Total University Entrants, All Scottish Domiciled Students, 2009/10 to 2012/2013**

	2009/10	2010/11	2011/12	2012/13	Change 2009/10 - 2012/13
<b>GES growth sectors</b>					
• Creative industries					
– Creative Arts and Design	64.0	44.3	60.4	58.1	↓
• Energy					
– Physical Sciences	43.5	59.0	40.8	41.9	↓
– Engineering	13.7	64.4	13.5	14.3	↑
• Financial and business services					
– Law	60.3	60.9	60.5	60.5	↑
– Business and Administrative studies	56.5	76.1	59.1	60.9	↑
• Food and drink					
– Veterinary Sciences, Agriculture and related subjects	52.9	59.5	53.6	61.7	↑
• Life sciences					
– Medicine and Dentistry	60.9	59.9	59.0	61.2	↑
– Biological Sciences	64.8	65.5	63.7	62.3	↓
– Veterinary Sciences, Agriculture and related subjects	52.9	59.5	53.6	61.7	↑
• Sustainable tourism					
– European Languages, Literature and related subjects	65.0	58.0	65.8	69.7	↑
– Languages	66.4	68.6	62.3	57.0	↓

	2009/10	2010/11	2011/12	2012/13	Change 2009/10 - 2012/13
• Universities	-	-	-	-	-
<b>Other growth sectors</b>					
• Chemical sciences					
– Physical Sciences	43.5	59.0	40.8	41.9	↓
• Construction					
– Architecture, Building and Planning	29.2	60.2	34.5	29.5	↑
• Engineering					
– Engineering	13.7	64.4	13.5	14.3	↑
• ICT and digital technologies					
– Mathematical and Computer Sciences	26.1	57.6	25.2	23.9	↓
– Technologies	22.3	56.9	24.3	27.5	↑
<b>All subjects</b>	61.2	60.2	60.3	60.1	↓

Source: Scottish Funding Council

Notes:

- Includes entrants on Postgraduate, First Degree, Other Undergraduate and Further Education programmes.
- Data is only available for broad subject grouping and on a percentage basis. As such, it is not possible to calculate the proportion of HE entrants into subjects relevant to each growth sector.
- There are no HE courses that specifically relate to universities.
- ↑: Sectors where there has been an increase in the representation of females between 2009/10 and 2012/13.
- ↓: Sectors where there has been a decrease in the representation of females between 2009/10 and 2012/13.

### Other Research

Whilst there is a range of research on the issues of gender equality within the labour market, few studies looked at this issue on a sector-by-sector basis. Key findings from those studies that are available are outlined below.

#### Composition of Workforce and Leadership

- Skillset (2012)<sup>6</sup> conducted a research where the employment composition of the creative media industries (such as film, TV and animation) was analysed. They found that the women accounted for 36% of the total workforce in 2012, compared to 27% in 2009. This increase is seen as having offset a decline in female representation between 2006 and 2009.

<sup>6</sup> Creative SkillsSet (2012) *Employment Census of the Creative Media Industries*.

- Research by Close the Gap<sup>7</sup> suggests that women account for just 17% of employees in the renewable energy sector, with the majority of these working in administration roles.
- Metclaf and Rolfe (2009)<sup>8</sup> using the third quarter of the 2008 UK QLFS perform a thorough analysis of employment characteristics within the UK financial sector with regard to gender. They found that the female employment in 2008 had declined in relative terms since 2003, compared to a slight increase in the overall employment in the sector over the same period.
- A report undertaken by the Institute of Hospitality (2011)<sup>9</sup> found that there was no significant difference in the levels of employment between men and women in the hospitality sector.

### **Barriers to Entry or Progression in Growth Sectors**

- The Royal Society of Edinburgh developed a strategy for women in science, technology, engineering and mathematics (STEM) in 2012<sup>10</sup>. This identified the key barriers to the participation of women in STEM as being:
  - The nature and organisation of STEM – with qualifications to enter the sector taking a long time to acquire, the high levels of career insecurity and long and irregular working hours – make it more difficult for women to enter and progress within the sector. Women face particular issues after becoming partners as some sectors are unwilling to consider part-time or flexible working patterns.
  - Implicit bias, with employers in the sector having not considered who their systems and processes can be discriminatory. A particular area of concern is in relation to promotion, with ‘male’ attributes or qualities being prioritised over others.
  - Family responsibility and career breaks, with caring responsibilities continuing to fall disproportionately on women.
  - Access to research resources, with women holding fewer research grants than men. A key problem is that even where grant applications are ‘gender neutral’, female academics are less likely to apply for funding, and when they do request small grants and for shorter timescales.

In relation to the growth sectors, these are likely to affect energy, life sciences, universities, chemical sciences, engineering and ICT and digital technologies – although they will manifest themselves differently across sectors.
- Research by Close the Gap<sup>11</sup> into the representation of women in the renewable energy sector suggests that the recruitment practices of the start-up companies within this sector (with a reliance informal networking) and lack of established skills paths into and through the sector may be disadvantaging women.
- Research by Women 1<sup>st</sup><sup>12</sup> suggests that the key barriers preventing women from progressing into more senior roles within the tourism sector are the difficulty of combining senior level positions and caring responsibilities; an organisational culture at a senior level that is

<sup>7</sup> Close the Gap (2013). Fixing the Leaky Pipeline: Securing a Supply of Skills in Scotland’s Renewable Energy Sector? Working Paper 7.

<sup>8</sup> Metcalf, H and Rolfe, H. (2009) *Employment and earnings in the finance sector: A gender analysis*. Equality and Human Rights Commission Research, Research report: 17

<sup>9</sup> Institute of Hospitality (2011). *The case for recruiting and retaining older workers: a business imperative for the Hospitality sector*. Knowledge Pack.

Available at: [https://www.instituteofhospitality.org/Knowledge\\_Pack\\_HOSPITALITY\\_Dec2011\\_v2](https://www.instituteofhospitality.org/Knowledge_Pack_HOSPITALITY_Dec2011_v2)

<sup>10</sup> The Royal Society of Edinburgh (2012). Tapping All Our Talents. Women in Science, Technology, Engineering and Mathematics: A Strategy for Scotland.

<sup>11</sup> Close the Gap (2013). Fixing the Leaky Pipeline: Securing a Supply of Skills in Scotland’s Renewable Energy Sector? Working Paper 7.

<sup>12</sup> Women 1<sup>st</sup> (2010). *The Case for Change: Women, Working in Hospitality, Leisure, Travel and Tourism*.

predominately male; preconceptions about women's ability to undertake senior roles; a lack of networking by women; and the lack of women in senior roles discouraging women from being ambitious.

- The Commission for Developing Scotland's Young Workforce (also known as the Wood Commission)<sup>13</sup> found that there was gender stereotyping within education and that many young people continue to make education and career choices based on stereotypes, with impacts on their longer term career opportunities. In addition, they found that the careers young people pursue are often gendered. In relation to growth sectors, they note that the gender balance of newer industries such as life sciences, renewables (part of energy) and IT have a gender imbalance. To tackle this, it made three recommendations namely:
  - “Senior phase vocational pathways should be designed to encourage more gender balance across occupations.
  - The Scottish Funding Council and colleges should develop an action plan to address gender disparities within college education. This should be underpinned by realistic but stretching improvement targets. The Scottish Funding Council should report on this annually.
  - Skills Development Scotland should develop an action plan to address gender disparities within Modern Apprenticeships. This should be underpinned by realistic but stretching improvement targets. SDS should report on this annually.”

### **Pay, Earnings and In-Work Poverty**

- In their most recent assessment of the gender pay gap in Scotland, Close the Gap found<sup>14</sup> that the women's full-time hourly pay was 13.3% below men's if the mean wage is used and 7.6% if the median wage is used. However, if women's part-time hourly wages are compared to men's full-time wages the gap is much wider at 33.7% and 33.5% respectively (mean and median). The pay gaps do however appear to have reduced slightly since 2012. Close the Gap does not analyse the gender pay gap on a sector by sector basis.
- Perfect (2012)<sup>15</sup> indicates that the sex pay gap in the UK was widest in financial and insurance sector, which had also the highest male median hourly earnings. The sex pay gap in this sector accounts to around 36.7%, approximately 4 times wider than the average sex pay gap across all industries (9.6%). This gap translates to £8.02. On the contrary, in the accommodation and food sector, where the median hourly wage is the lowest the sex pay gap is also very low, estimated to 7.2%. In Construction the sex pay gap accounts for 11.2% where in Human, Health and Social work industry it goes up to over 18% (18.1%). The author classifies industries using the SIC 2007 section coding and therefore all other industry section does not directly correspond to the Growth Sectors classification implemented by our study.
- Metcalf and Rolfe (2009) found that the gender pay gap for those working full-time in the finance sector was approximately double than that in the UK economy as whole, whilst for part-time workers it is the same gap as the economy as a whole. In addition, both the full-time and part-time gender pay gaps increased as wages rose.
- Research by the Resolution Foundation<sup>16</sup> found that 53% of those on a zero hours contracts are female, whilst 47% are male.

<sup>13</sup> Commission for Developing Scotland's Young Workforce (2014). *Education Working for All!* Edinburgh: Scottish Government.

<sup>14</sup> Close the Gap (2014). Close the Gap Working Paper 11.

<sup>15</sup> Perfect, D. (2012). *Gender Pay Gaps, 2012*. Equality and Human Rights Commission

<sup>16</sup> Pennycook, M., Cory, G. and Alakeson, V. (2013). *A Matter of Time. The Rise of Zero-Hours Contracts*. Resolution Foundation.

- Research by IPPR and the Resolution Foundation<sup>17</sup> found that women are at greater risk of low pay with 25% of female employees paid below the Living Wage compared to 15% of male employees. 62% of all employees paid below the Living Wage are women. Similarly, the Joseph Rowntree Foundation<sup>18</sup> found that 27% of female employees and 15% of male employees earned less than the Living Wage. More positively, they also found that the proportion of women that are low paid has been declining since 2001 (from 35% in 2001 to 25% in 2011) although there had been a slight increase between 2011 and 2012. The IPPR and Resolution Foundation research found that the industries with highest proportion of employees earning less than the Living Wage are hotels and restaurants, wholesale and retail, administration and the arts. Whilst these are defined more broadly than the growth sectors, this would suggest that tourism and the creative industries are the sectors with the largest proportion of staff earning less than the Living Wage.
- Research from the Joseph Rowntree Foundation<sup>19</sup> found that more women than men were underemployed - that is someone that is not working as much as they want to, including those that are currently unemployed. Across the UK as a whole, 3.2 million women are underemployed, compared to 3 million men.

### **Recognition of Gender within Assessments of Sector Needs**

- In a review of industry statements on skills needs and shortages published by the Sector Skills Councils, Scottish Government, Skills Development Scotland, Scottish Enterprise and Highlands and Islands Enterprise, Sosenko<sup>20</sup> found that gender is the only protected characteristic that is considered in most skills assessments, with many highlighting the low levels of females in managerial roles. On a sector-by-sector basis, he found that:
  - Creative industries statements commonly identify the underrepresentation of women in the sector as an issue, with some highlighting the lack of females in senior roles as a particular challenge.
  - The Scottish Government's refreshed *2020 Renewables Routemap for Scotland* is flagged up for having undertaken an Equalities Statement. This highlighted that women are significantly underrepresented in the sector and are highly concentrated in administrative and sales roles. The Routemap highlights that women need to be supported to develop the skills and experience relevant to the sector. Other statements of the skills needs of the energy sector also recognise the underrepresentation of women of the sector although few appear to make recommendations on how to tackle this issue.
  - As females are well-represented within financial and business services, there is less of a focus on how to improve their representation than in the skills assessments for some other sectors. In particular, skills statements for this sector do not appear to include any analysis of how representation at a board level could be improved.
  - There was limited evidence of equality issues being considered in the skills assessments for the food and drink industry, with only one appearing to provide any data on female representation in the sector – and none making recommendations on how gender representation could be improved.

---

<sup>17</sup> IPPR and Resolution Foundation (2013). *Beyond the Bottom Line: The Challenges and Opportunities of a Living Wage*.

<sup>18</sup> Joseph Rowntree Foundation (2013). *Monitoring Poverty and Social Exclusion*.

<sup>19</sup> Joseph Rowntree Foundation (2013). *Monitoring Poverty and Social Exclusion*.

<sup>20</sup> Sosenko, F. (2013). *Analysis of Industry Statements on Skills Needs and Shortages*.

- Most of the skills assessment relevant to life sciences flagged up the under-representation of women – although it should be noted here that as many covered the wider categories of science and engineering, this does not necessarily provide an accurate picture for life sciences itself. A number made explicit recommendations to widen participation of females in the sector.
- Females are over-represented in the tourism sector – and a number of skills assessments recognise this. However, a number of skills assessments undertaken by the Sector Skills Council, People 1<sup>st</sup> have highlighted that female representation is much lower in managerial positions and at a board level.
- In relation to universities, the key issues raised by the industry statements relate to improving representation of women on the governing bodies of universities and in STEM disciplines.

### **Occupational Profile**

- In their research into the workforce of the creative media industries (such as film, TV, radio and animation) Skillset (2012)<sup>21</sup> found that there were wide variations in the representation of women across different specialisms and occupations. Women were underrepresented in strategic management, engineering and transmission, content development, art and design, animators, camera/photography, lighting, audio/sound/music, transport, studio operations, technical development, editing, manufacture and servicing occupations.
- Research by Close the Gap<sup>22</sup> suggests that the majority of women working in renewable energy are currently working in administrative roles. In addition, they estimate that just 10% of jobs in the renewable technologies (e.g. development and supply chain activities) are held by women – although they feel that great analysis is needed to understand why.
- Metcalf and Rolfe (2009) found that in the finance sector, women tend to work in smaller establishments, with a high concentration employed in administrative and secretarial jobs. In contrast, only a small proportion of managerial jobs were filled by women. They found that the occupational segregation by gender was much more pronounced than in the economy as a whole. Linked to this, 39% of men working in finance have a degree, compared to just 20% of women.
- Research by Close the Gap in 2010<sup>23</sup> found that women are under-represented in senior and managerial roles in all STEM areas. This is true even for bioscience and medicine where women are over-represented in the sector as a whole. This is referred to as the ‘leaky pipeline’.
- A report undertaken by the Equality Challenge Unit (2014)<sup>24</sup> on higher education found that:
  - The majority of the professional and support staff within the higher education sector were female (63%), whilst the majority of academic staff are men (56%).
  - Looking at academic staff in more detail, women are more commonly employed in routine task provider roles, as assistant professional and administrative staff, professional/technical/senior administrative staff, research assistant and teaching assistant

<sup>21</sup> Creative SkillsSet (2012) *Employment Census of the Creative Media Industries*.

<sup>22</sup> Close the Gap (2013). *Fixing the Leaky Pipeline: Securing a Supply of Skills in Scotland’s Renewable Energy Sector?* Working Paper 7.

<sup>23</sup> Close the Gap (2010). *Women: The Missing Link? A Discussion Paper on Occupational Segregation Within Science, Engineering and Technology*.

<sup>24</sup> Equality Challenge Unit (2014) *Equality in higher education: statistical report 2014 Part 1: staff*.

roles. All other academic roles are dominated by males. In particular, 78% of professors are male. In Science, Engineering and Technology (SET) subject areas, the proportion is even higher (83%).

### Views of Key Consultees

A number of key organisations with perspectives on gender were interviewed for this research including Close the Gap, Equate Scotland, Family Friendly Network Scotland and Women's Enterprise Scotland.

- It was felt that the way work is organised within some sectors makes it more difficult for women to get and retain employment. This can include:
  - Shift working.
  - Long working hours.
  - A lack of flexible working and part-time roles.
- Specifically in relation to sectors that rely on Science, Technology, Engineering and Mathematics (STEM) subjects (for example, chemical sciences, energy, life sciences and engineering) the key issues are that:
  - A lack of role models results in young women not considering these sectors as career options.
  - Even if women choose to study a STEM subject, research has found that they are less likely to pursue a career in a STEM occupation than males studying the same subject.
  - For those that do enter the sector, the culture can make it difficult to sustain or progress within careers. For example, if an individual is the only female in the workplace, they may be excluded from activities outside of the workplace or may not be mentored in the same way as their male colleagues. The evidence is that women leave STEM occupations at each stage in their career and personal life (e.g. having children).
- Within the sectors that draw most heavily on STEM subjects, it was felt that:
  - Life sciences offers good career options for women. There is already strong representation of women within this sector and this critical mass has helped create a more female-friendly culture. However, women are under-represented in more senior positions.
  - IT and digital technologies offer potential very good careers for women and women played a critical role in the sector in previous decades – but that it is becoming less appealing to women over time.
  - Engineering, energy and chemical sciences are all seen as male dominated – and that this will make it less likely that women will consider a career in these sectors.
  - Close the Gap developed a network of women in the renewable energy sector over an 18-month period (ending in March 2015). As this sector is relatively new, it is felt that there is potential to create a culture that is strongly supportive of women. However, newer and smaller employers are less likely to have good equalities practices in place.
- A common theme mentioned by a number of consultees was that even when an organisation has policies and processes in place that are supportive to women (for example, for flexi-time or to enable employees to request part-time working hours), the culture of the workplace can result in these not being used. Linked to this, a number of consultees suggested that there was a need for employers to be more creative in job design. This is seen as increasingly important not just for female participation in the workplace but also for other groups as their norms and expectations of what a job should be change.

- In terms of reaching senior leadership roles, some consultees felt women lacked self-confidence to put themselves forward for promotion – meaning that unless an employer has a supportive culture and processes in place to encourage females to apply for more senior roles, women will not reach senior roles. Furthermore, a number of consultees flagged the importance of mentoring to help women progress within the workplace.
- In relation to women's self-employment, the key barriers women face in starting their own business is a lack of social networks (for example to individuals that are able to provide advice, signpost to professionals and business network, etc.) and access to finance (especially if they have been out of the labour market prior to starting the business). A further issue can be a lack of knowledge of what to expect meaning, for example, that it is more difficult for them to assess the quality of the business advice they are being given.
- Looking beyond this, it was felt that enterprise agencies often structure the support available to new starts around the way male-owned businesses tend to develop (with growth occurring at an early stage in the business' life or focusing on turnover growth as the main indicator of success) meaning that support that is better aligned to the way women-owned businesses develop is not available.

### Key Messages

1. Overall, women are well-represented in the labour force, accounting for 53% of all employees, but are less well represented within the self-employed and company directors (accounting for 35% and 31% respectively). Females are under-represented within Modern Apprenticeship starts (accounting for just 41% of starts in 2013/14). Females are over-represented within both college enrolments and Scottish domiciled university entrants – although this is much more pronounced for university entrants (with females accounting for 60% of entrants, compared to 53% of college enrolments).
2. Looking at the growth sectors:
  - Females are under-represented in the workforce of energy, food and drink, chemical sciences, construction, engineering and ICT and digital technologies. In general, females are also under-represented in the training and education routes that lead to these sectors – suggesting that this imbalance will not be addressed in the near future.
  - Females are over-represented in the workforce of the financial and business services, life sciences, tourism and universities sectors. Females also tend to be over-represented in the numbers undertaking college or university courses leading to roles within these sectors.
  - Whilst the pattern of female self-employment across the growth sectors is generally similar to that of female employment (although at lower rates for most sectors), the profile of directors is less clear cut with between 27% and 33% of directors in all growth sectors (except life sciences) being female.
3. The continued under-representation of women in 6 of the 11 key sectors is a cause for concern. In particular, those sectors where the representation of women has declined between 2009 and 2013 are all sectors where women were already under-represented. In light of these challenges, focus must be given to how the representation of women within these sectors can be improved.



### 3. AGE PROFILE OF GROWTH SECTORS

#### Introduction

Generally two age groups experience disadvantage within labour market – young and older workers. At the time of 2011 Census:

- 12% of Scottish population was aged 16-24
- 20% was aged 50-64 and further 9% aged 65-74.

The Scottish Enterprise area has a similar age profile to Scotland as a whole but the Highlands and Islands area has a much smaller proportion of young people than Scotland as a whole (9%) and larger proportion of those in the older age bands (with 22% of the HIE population aged 50-64 and 11% aged 65-74).

Looking at the working age population (defined as those aged 16-64), those aged 16-24 accounted for 18%, whilst 50-64 year olds accounted for 30%. The proportions for the Scottish Enterprise area were similar to those for Scotland as a whole (18% and 29% respectively) – but the Highlands and Islands area has a lower proportion of young people (with those aged 16-24 accounting for just 15% of the working age population) and a higher proportion of older workers (with those aged 50-64 accounting for 35% of the working age population).

#### Employment

Looking first at young people

- In 2013, under 25s accounted for 12% of all employees in the Scottish labour market.
- In general, they are under-represented within the growth sectors. The only sectors they are over-represented are food and drink (where they account for 14% of employment) and tourism (where they account for 34% of employees).
- The proportion of employees that are under 25 is broadly the same in the Scottish Enterprise and Highlands and Islands Enterprise areas as in Scotland as a whole. However, whilst young people are over-represented within tourism employment in the Highlands and Islands Enterprise area, they account for a smaller proportion of the workforce than in Scottish Enterprise. This is likely to reflect the role tourism plays in sustaining fragile rural areas.

Since 2009, the proportion of the employees that are under 25 has declined in 5 of the growth sectors – and remained constant in one other. This is likely to be connected to the increase in youth unemployment that has been observed over the same period.

**Figure 10: Young People as % of Total Employees in Growth Sectors, Scotland, 2009 and 2013**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>GES growth sectors</b>									
• Creative industries	10.0	10.8	↑	10.9	10.0	↓	0.0	-	-
• Energy	7.7	6.7	↓	8.3	6.8	↓	3.6	6.2	↑
• Financial and business services	9.4	10.4	↑	9.2	10.1	↑	11.7	15.2	↑
• Food and drink	11.0	14.2	↑	11.8	14.7	↑	8.6	12.7	↑
• Life sciences	5.8	3.3	↓	6.5	3.8	↓	-	-	-
• Sustainable tourism	35.1	34.1	↓	36.4	34.9	↓	28.0	29.0	↑
• Universities	4.7	3.0	↓	4.6	3.1	↓	-	-	-
<b>Other growth sectors</b>									
• Chemical sciences	6.9	6.9	-	7.4	6.8	↓	-	-	-
• Construction	16.8	10.3	↓	16.4	10.2	↓	19.8	10.9	↓
• Engineering	6.3	8.9	↑	6.0	9.0	↑	8.9	7.8	↓
• ICT and digital technologies	2.9	6.5	↑	3.0	6.4	↑	-	-	-
<b>All industries</b>	11.8	11.5	↓	12.0	11.5	↓	10.7	10.6	↓

Source: Annual Population Survey

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of young people between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of young people between 2009 and 2013.

Turning to older age groups, those aged 55 and over accounted for 21% of employees in 2013.

- Older age groups appear to be under-represented in most of the growth sectors. The only sectors where they are over-represented are universities and engineering.
- There are particularly low proportions of older employees in tourism, chemical sciences and ICT and digital technologies.
- The pattern of older employment in the growth sectors appears to be similar in the Scottish Enterprise area as Scotland. Within the Highlands and Islands Enterprise area, older people account for a larger proportion of employees overall. There are higher rates of older employees in energy, financial and business services and tourism than in Scotland as a whole.

Overall, older people account for an increasing proportion of employees, having increased from 19% in 2009 to 21% in 2013.

- Older employees accounted for a larger proportion of employment in 2013 than in 2009 in energy, financial and business services, universities, construction and ICT and digital technologies. It is unclear whether this reflects an ageing of the workforce or some other factor.

**Figure 11: Older People as % of Total Employees in Growth Sectors, Scotland, 2009 and 2013**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>GES growth sectors</b>									
• Creative industries	16.8	16.6	↓	16.8	16.6	↓	16.7	-	-
• Energy	13.3	17.9	↑	12.2	16.7	↑	20.5	23.0	↑
• Financial and business services	13.4	13.8	↑	12.8	13.5	↑	20.4	18.2	↓
• Food and drink	22.2	20.9	↓	22.2	20.5	↓	22.1	19.8	↓
• Life sciences	16.5	15.2	↓	16.8	12.7	↓	-	-	-
• Sustainable tourism	13.2	11.5	↓	11.7	9.3	↓	21.1	25.3	↑
• Universities	23.6	24.1	↑	23.5	23.3	↓	-	-	-
<b>Other growth sectors</b>									
• Chemical sciences	15.2	13.8	↓	15.6	14.5	↓	-	-	-
• Construction	15.8	20.5	↑	15.3	20.3	↑	18.6	21.9	↑
• Engineering	24.1	23.7	↓	24.2	23.7	↓	23.3	23.4	↑
• ICT and digital technologies	5.8	13.0	↑	5.3	10.9	↑	-	-	-
<b>All industries</b>	18.5	20.6	↑	17.8	19.8	↑	23.7	26.4	↑

Source: Annual Population Survey

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of older people between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of older people between 2009 and 2013.

In 2013, 44% of young people in employment in Scotland were working part-time. This was an increase on 2009 (when the rate was 41%) and perhaps reflects the challenging labour market prospects faced by young people as a result of the recession. The proportion of young people that are employed part-time is higher in the Scottish Enterprise area than in the Highlands and Islands Enterprise area (44% compared to 40%). In terms of the growth sectors:

- In general, the proportion of young people working in these sectors that are working part-time is much lower than across the economy as a whole and is less than 10% in energy, construction and engineering.
- The exceptions to this are creative industries and tourism, which both have high levels of part-time employment amongst young people (58% and 67%).
- In general, the proportion of young people that are working part-time in the growth sectors is increasing.

**Figure 12: Young People Part-time Employees as % of Young People Employees in Growth Sectors, 2009 and 2013**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>GES growth sectors</b>									
• Creative industries	48.6	58.1	↑	50.0	-	-	-	-	-
• Energy	4.2	4.9	↑	4.4	2.9	↓	-	-	-
• Financial and business services	15.7	15.3	↓	16.5	14.8	↓	-	-	-
• Food and drink	12.9	16.9	↑	12.0	20.0	↑	-	-	-
• Life sciences	-	-	-	-	-	-	-	-	-
• Sustainable tourism	66.3	66.7	↑	68.2	67.2	↓	53.1	62.5	↑
• Universities	-	-	-	-	-	-	-	-	-
<b>Other growth sectors</b>									
• Chemical sciences	-	-	-	-	-	-	-	-	-
• Construction	2.9	6.5	↑	2.9	3.8	↑	3.0	-	-
• Engineering	5.2	4.6	↓	2.0	5.0	↑	-	-	-
• ICT and digital technologies	-	-	-	-	-	-	-	-	-
<b>All industries</b>	41.4	43.6	↑	41.9	44.1	↑	37.2	40.2	↑

Source: Annual Population Survey

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of young people between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of young people between 2009 and 2013.

Young people account for 18% of all part-time workers in Scotland and the Scottish Enterprise area – but only 14% in the Highlands and Islands area. In general, young people account for less than 10% of the part-time workers in growth sectors. The key exceptions to this are:

- Tourism – where they account for 49% of part-time workers. As we saw earlier, young people account for over a third of employees in this sector – so this suggests that young people are not only over-represented in this sector, they are also over-represented in terms of part-time workers in the sector. Young people account for a smaller proportion of part-time workforce in tourism in the Highlands and Islands Enterprise area than in the Scottish Enterprise area (42% compared to 50%).
- Creative industries and food and drink where they account for 21% and 19% of part-time workers – similar to the rates of young people working part-time work the economy as a whole.

In some growth sectors, the proportion of part-time employees that are young has increased, whilst in others it is decreasing. There is no clear pattern in terms of the changes.

**Figure 13: Young People Part-time Employees as % of Part-time Employees in Growth Sectors, 2009 and 2013**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>GES growth sectors</b>									
• Creative industries	19.1	21.2	↑	22.1	21.6	↓	-	-	-
• Energy	4.3	4.7	↑	5.0	2.9	↓	-	-	-
• Financial and business services	6.4	7.6	↑	6.8	7.3	↑	3.1	-	-
• Food and drink	12.9	19.3	↑	12.0	24.4	↑	-	-	-
• Life sciences	-	-	-	-	-	-	-	-	-
• Sustainable tourism	50.2	48.9	↓	52.8	50.0	↓	34.7	41.7	↑
• Universities	9.9	3.7	↓	9.3	3.9	↓	-	-	-
<b>Other growth sectors</b>									
• Chemical sciences	-	-	-	-	-	-	-	-	-
• Construction	9.1	9.0	↓	8.8	5.6	↓	-	-	-
• Engineering	5.1	7.1	↑	2.2	8.3	↑	-	-	-
• ICT and digital technologies	-	-	-	-	-	-	-	-	-
<b>All industries</b>	18.0	17.6	↓	18.7	18.3	↓	13.4	13.5	↑

Source: Annual Population Survey

Notes:

- ‘-’: Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of young people between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of young people between 2009 and 2013.

36% of older employees were working part-time in Scotland in 2013. This is a slight increase on the 2009 rate. The proportion of older employees that are working part-time is higher in the Highlands and Islands Enterprise area than in the Scottish Enterprise areas (39% compared to 35%).

- In most growth sectors, the proportion of older employees that are working part-time is lower than across the economy as a whole. In particular, just 11% of older people working in energy and engineering, 14% of those working in construction and 17% of those working in food and drink are working part-time.
- In contrast, 39% of older workers working in tourism and 45% of those working in universities are working on a part-time basis.
- In most growth sectors for which there is data, the proportion of older employees that are working part-time has declined between 2009 and 2013. One key exception to this is construction where the proportion of older workers are working part-time has increased. This may reflect the decline in this sector as a result of the recession.

**Figure 14: Older People Part-time Employees as % of Older People Employees in Growth Sectors, 2009 and 2013**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>GES growth sectors</b>									
• Creative industries	44.1	33.3	↓	40.7	30.2	↓	-	-	-
• Energy	13.3	10.9	↓	12.1	7.1	↓	-	-	-
• Financial and business services	35.3	32.5	↓	35.5	32.4	↓	-	-	-
• Food and drink	16.0	16.7	↑	17.0	15.7	↓	-	-	-
• Life sciences	-	-	-	-	-	-	-	-	-
• Sustainable tourism	44.9	38.6	↓	46.4	39.2	↓	40.5	37.1	↓
• Universities	-	45.2	-	-	44.1	-	-	-	-
<b>Other growth sectors</b>									
• Chemical sciences	-	-	-	-	-	-	-	-	-
• Construction	10.4	13.5	↑	9.3	14.6	↑	16.1	-	-
• Engineering	12.1	10.9	↓	10.9	9.4	↓	-	-	-
• ICT and digital technologies	-	-	-	-	-	-	-	-	-
<b>All industries</b>	34.9	35.5	↑	34.3	34.7	↑	37.9	39.2	↑

Source: Annual Population Survey

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of older people between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of older people between 2009 and 2013.



Older people account for 26% of all part-time workers in Scotland. The rates are quite different in the Scottish Enterprise and Highlands and Islands Enterprise areas – with 25% of part-time workers aged 55 and over in the SE area compared to 33% in the HIE area. There has been an increase in the proportion of part-time workers that are aged 55 and over in all three areas between 2009 and 2013.

- The proportion of part-time workers that are aged 55 and over varies significantly across the growth sectors from just 10% in tourism to 45% in engineering. In 5 growth sectors, the proportion of part-time workers that are aged 55 and over is above the average for the economy as a whole.
- The proportion of part-time workers that are older workers has increased in some sectors since 2009 and declined in others. There is no clear pattern in terms of these changes.

**Figure 15: Older People Part-time Employees as % of Part-time Employees in Growth Sectors, 2009 and 2013**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>GES growth sectors</b>									
• Creative industries	29.2	18.8	↓	28.6	17.6	↓	-	-	-
• Energy	23.4	27.9	↑	20.0	17.6	↓	-	-	-
• Financial and business services	20.5	21.4	↑	20.4	21.5	↑	21.9	-	-
• Food and drink	32.3	28.1	↓	32.0	26.8	↓	-	-	-
• Life sciences	-	-	-	-	-	-	-	-	-
• Sustainable tourism	12.7	9.6	↓	11.5	7.8	↓	20.0	21.7	↑
• Universities	31.7	40.2	↑	32.0	39.0	↑	-	-	-
<b>Other growth sectors</b>									
• Chemical sciences	-	-	-	-	-	-	-	-	-
• Construction	30.3	37.3	↑	26.3	42.6	↑	-	-	-
• Engineering	45.8	45.2	↓	48.9	41.7	↓	-	-	-
• ICT and digital technologies	-	-	-	-	-	-	-	-	-
<b>All industries</b>	23.8	25.9	↑	22.7	24.8	↑	30.2	32.7	↑

Source: Annual Population Survey

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of older people between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of older people between 2009 and 2013.

## Self-Employment

Only 2% of the self-employed are under 25. Similarly, only a very small proportion of the self-employed in each growth sector are under 25, with the highest rates observed in the creative industries, food and drink, construction and ICT and digital technologies. Whilst the proportions that are self-employed in each growth sector have changed since 2009, there is no consistent pattern either across growth sectors or across the three different geographies under consideration. Care should be taken in interpreting the changes presented as the small number of young people surveyed within the APS that are self-employed makes these subject to small fluctuations from year to year.

**Figure 16: Young People as % of Total Self-employment in Growth Sectors, Scotland, 2009 and 2013**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>GES growth sectors</b>									
• Creative industries	1.7	3.2	↓	2.1	3.1	↑	0.0	-	-
• Energy	0.0	0.0	-	0.0	0.0	-	-	-	-
• Financial and business services	0.5	1.0	↑	0.0	1.2	↑	-	-	-
• Food and drink	3.8	2.7	↓	3.6	3.4	↓	4.1	1.3	↓
• Life sciences	-	-	-	-	-	-	-	-	-
• Sustainable tourism	0.0	1.3	↑	0.0	0.9	↑	0.0	2.0	↑
• Universities	-	-	-	-	-	-	-	-	-
<b>Other growth sectors</b>									
• Chemical sciences	-	-	-	-	-	-	-	-	-
• Construction	2.3	3.3	↑	2.4	3.5	↑	1.6	2.8	↑
• Engineering	0.0	0.0	-	0.0	0.0	-	-	-	-
• ICT and digital technologies	5.6	2.3	↓	6.3	2.3	↓	-	-	-
<b>All industries</b>	1.9	2.1	↑	2.1	2.2	↑	1.2	1.5	↑

Source: Annual Population Survey

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of young people between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of young people between 2009 and 2013.

38% of those that are self-employed are over 55. The rate is considerably higher in the Highlands and Islands Enterprise area – where they account for 49% of the self-employed, compared to the Scottish Enterprise area where they account for 36%.

- All growth sectors have a high proportion older self-employed– with the lowest rate being construction, where 32% of those who are self-employed being aged 55 and over.
- Food and drink and tourism are the sectors with the largest proportion of self-employment within this age band – with those aged 55 and over accounting for 48% of the self-employed in both sectors. This may reflect the ageing population in the agricultural sector and lifestyle choices in relation to tourism.
- There are some differences in the profile of Scottish Enterprise and Highlands and Islands Enterprise. In particular, those aged 55 and over account for a much larger proportion of those self-employed in the food and drink and tourism sector in Highlands and Islands than in the Scottish Enterprise area.

Looking at change over time, older people are an increasing proportion of the self-employed (in all three geographies). Within this:

- They account for an increasing proportion of the self-employed in 6 of the growth sectors.
- There has been a particularly large increase in the proportion of the self-employed they account for in food and drink (from 40% to 48%), tourism (from 40% to 48%) and ICT and digital technologies (from 31% to 36%).

**Figure 17: Older People as % of Total Self-employment in Growth Sectors, Scotland, 2009 and 2013**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>GES growth sectors</b>									
• Creative industries	37.1	38.4	↑	31.7	35.8	↑	63.3	-	-
• Energy	40.0	41.2	↑	42.9	38.9	↓	-	-	-
• Financial and business services	41.2	37.2	↓	40.5	35.8	↓	-	44.1	-
• Food and drink	39.7	47.8	↑	36.4	43.2	↑	47.3	56.6	↑
• Life sciences	-	-	-	-	-	-	-	-	-
• Sustainable tourism	39.6	47.8	↑	30.8	36.4	↑	64.3	73.5	↑
• Universities	-	-	-	-	-	-	-	-	-
<b>Other growth sectors</b>									
• Chemical sciences	-	-	-	-	-	-	-	-	-
• Construction	28.0	31.7	↑	25.7	31.4	↑	42.6	33.3	↓
• Engineering	48.0	42.4	↓	47.5	42.1	↓	-	-	-
• ICT and digital technologies	30.6	36.4	↑	28.1	34.9	↑	-	-	-
<b>All industries</b>	34.8	38.1	↑	32.3	35.7	↑	47.2	48.9	↑

Source: Annual Population Survey

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of older people between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of older people between 2009 and 2013.

### **Modern Apprenticeships**

At the policy level there is a strong focus on under 25s in terms of Scotland's publicly funded apprenticeship effort. In line with policy priorities the level of funding and starts in contracts is prioritised towards 16 to 19 year olds first, followed by 20 to 24 year olds. The rationale for this is that MAs are a joint investment between employers and public funding. Employers invest the greater amount through wage costs and on-going support and public funding contributes to some of the cost of training.

- At the Scottish level nearly 79% of MA starts in 2013/14 were under 25, up from just over 57% in 2009/10.
- This overall pattern is reflected in some of the growth sectors but there are also marked variations with declines in the percentage of young people as a proportion of starts in food and drink and construction, contrasted with marked increases in creative industries, sustainable tourism and ICT and digital.

**Figure 18: Under 25 as % of Total Modern Apprenticeship Starts by Growth Sector, Scotland, 2009/10-2013/14**

	2009/10	2010/11	2011/12	2012/13	2013/14	Change 2009/10 – 2013/14
<b>GES growth sectors</b>						
• Creative industries	-	41.5	52.4	74.5	88.9	↑
• Energy	63.9	60.2	68.5	55.8	66.0	↑
• Financial and business services	70.4	31.0	47.5	71.7	66.4	↓
• Food and drink	57.1	54.8	42.6	40.3	37.2	↓
• Life sciences	-	48.1	-	-	-	-
• Sustainable tourism	63.6	67.3	65.0	87.2	87.6	↑
• Universities	-	-	-	-	-	-
<b>Other growth sectors</b>						
• Chemical sciences	-	-	-	-	-	-
• Construction	78.2	80.6	68.1	66.7	64.0	↓
• Engineering	87.7	89.0	87.0	93.0	92.7	↑
• ICT and digital technologies	33.7	39.0	55.5	73.1	74.8	↑
<b>All industries</b>	57.4	68.9	63.5	76.6	78.6	↑

Source: Skills Development Scotland

Notes:

- There are no MAs that specifically relate to universities.
- Appendix 2 provides details of which frameworks have been allocated to each growth sector.
- ↑: Sectors where there has been an increase in the representation of under 25s between 2009/10 and 2013/14.
- ↓: Sectors where there has been a decrease in the representation of under 25s between 2009/10 and 2013/14.

### Business Leadership

As the business leadership is drawn from a different data source (FAME), the age bands available are slightly different – with the data presented in this section for directors aged under 30 and over 60.

We noted earlier that under 25s account for 12% of all employees in Scotland, although 11.5% in the growth sectors. It is clear from the table below that even on an extended definition of ‘young’ going up to the under 30s, young people are very under-represented as directors.

- Only 4.3% of directors in all industries fall into the young category and this falls to 3.7% for the HIE area.
- For the growth industries at the Scottish level, the range is from under 2% for chemical sciences and life sciences up to 3% or more for creative industries, sustainable tourism and ICT and digital technologies.
- There are some differences between the SE and HIE areas with 4.7% of directors in engineering drawn from young people compared to 2.4% in the SE area.

As noted in the chapter on gender, FAME is a ‘live’ database, it is not possible to analyse change over time. However, if Scottish Enterprise, Highlands and Islands Enterprise and Skills Development Scotland were to commit to extract data on an annual basis (e.g. in December of each year), it would be possible to begin to compare change over time.

**Figure 19: Directors Aged Under 30 as % of All Directors by Growth Sectors, 2014**

	Scotland	Scottish Enterprise	Highlands and Islands Enterprise
<b>GES growth sectors</b>			
• Creative industries	3.7	3.8	3.0
• Energy	2.2	2.1	3.3
• Financial and business services	2.1	2.0	2.3
• Food and drink	2.7	2.5	3.0
• Life sciences	1.3	1.4	0.0
• Sustainable tourism	3.8	4.0	2.9
• Universities	2.4	1.8	3.0
<b>Other growth sectors</b>			
• Chemical sciences	0.9	0.9	0.0
• Construction	2.7	2.7	2.9
• Engineering	2.6	2.4	4.7
• ICT and digital technologies	3.7	3.7	3.2
<b>All industries</b>	4.3	4.4	3.7

Source: Financial Analysis Made Easy (FAME) database

Notes:

- Data extracted December 2014/January 2015.
- FAME is a 'live' database so it is not possible to undertake an analysis over time.

An alternative measure is the percentage of companies with at least one director aged under 30.

- Across all industries over 1 in 5 companies have a young director.
- The range goes from 15.2% for chemical sciences to 26.3% for universities, although the definition of a 'director' in a university may be difficult to tie down.
- The pattern is similar for the SE and HIE areas but with some variances. For example, the percentage of companies in food and drink and construction with a director aged under 30 is higher in the HIE area compared to SE. However, the converse holds for life sciences and ICT and digital.



**Figure 20: % of Companies in Growth Sectors with At Least One Director Aged Under 30, 2014**

	Scotland	Scottish Enterprise	Highlands and Islands Enterprise
<b>GES growth sectors</b>			
• Creative industries	24.6	24.7	23.7
• Energy	25.2	25.4	23.7
• Financial and Business Services	20.6	20.6	20.1
• Food and Drink	24.3	23.3	27.9
• Life Sciences	17.8	18.1	13.5
• Sustainable Tourism	20.3	20.1	21.9
• Universities	26.3	24.3	-
<b>Other growth sectors</b>			
• Chemical Sciences	15.2	16.2	-
• Construction	23.0	22.6	27.0
• ICT and Digital Technologies	24.9	25.1	21.2
• Engineering	23.7	23.6	24.1
<b>All industries</b>	22.6	22.4	24.1

Source: Financial Analysis Made Easy (FAME) database

Notes:

- Data extracted December 2014/January 2015.
- FAME is a 'live' database so it is not possible to undertake an analysis over time.

Turning to the other end of the age spectrum and focusing on 60+ as the 'old' age threshold:

- Across all sectors at the Scottish level 21.8% of directors fall into this age band but this rises to 28.4% in the HIE area which may reflect a higher incidence of small family owned businesses.
- In the growth sectors the percentage of older directors ranges from 11.6% in ICT and digital to 32.9% in chemical sciences but rising to 36.3% if universities are included.
- Although the patterns are similar in the SE and HIE area, in some growth sectors the percentage of older directors is much higher. This applies particularly to creative industries and to sustainable tourism.

**Figure 21: Directors Aged 60 and Over of All Directors by Growth Sectors, Scotland, 2014**

	Scotland	Scottish Enterprise	Highlands and Islands Enterprise
<b>GES growth sectors</b>			
• Creative industries	19.3	18.4	30.2
• Energy	19.1	18.5	23.7
• Financial and Business Services	20.9	20.5	25.7
• Food and Drink	29.0	29.5	27.7
• Life Sciences	30.3	29.8	36.1
• Sustainable Tourism	27.3	25.5	37.4
• Universities	36.3	34.5	41.5
<b>Other growth sectors</b>			
• Chemical Sciences	32.9	32.7	36.7
• Construction	20.8	20.8	21.0
• Engineering	22.1	22.2	21.0
• ICT and Digital Technologies	11.6	11.4	16.4
<b>All industries</b>	21.8	21.0	28.4

Source: Financial Analysis Made Easy (FAME) database

Notes:

- Data extracted December 2014/January 2015.
- FAME is a 'live' database so it is not possible to undertake an analysis over time.

Considering the alternative measure which focuses on the percentage of companies with at least one director aged 60 or over the following are key findings.

- Whereas across all sectors nearly 56% of Scottish companies have a director aged 60 or over, there is again a marked difference between the HIE and SE area. In the HIE area the figure is nearly 69%.
- Within the growth sectors at the Scottish level the range goes from 53.4% in ICT and digital up to 82.6% for food and drink – but rising to 93.8% for universities. There are again very big differences between HIE and SE in relation to creative industries and sustainable tourism.

**Figure 22: % of Companies in Growth Sectors with At Least One Director Aged 60 or Over, 2014**

	Scotland	Scottish Enterprise	Highlands and Islands Enterprise
<b>GES growth sectors</b>			
• Creative industries	60.0	59.0	75.8
• Energy	68.2	68.2	68.3
• Financial and Business Services	59.1	58.8	62.8
• Food and Drink	82.6	82.1	84.5
• Life Sciences	75.7	75.8	75.7
• Sustainable Tourism	58.5	55.4	84.1
• Universities	93.8	84.3	-
<b>Other growth sectors</b>			
• Chemical Sciences	77.5	79.3	-
• Construction	62.1	61.5	67.6
• ICT and Digital Technologies	53.4	53.4	54.4
• Engineering	64.6	65.4	56.0
<b>All industries</b>	55.9	54.7	68.7

Source: Financial Analysis Made Easy (FAME) database

Notes:

- Data extracted December 2014/January 2015.
- FAME is a 'live' database so it is not possible to undertake an analysis over time.

## Education and Training

### *College Enrolments*

As part of the Scottish Government's reform of Post-16 Vocational Education and Training, Scotland's colleges have undergone significant change with major shifts in funding allied to a radical restructuring of colleges through mergers to produce a stronger network of regional colleges. Although the funding changes have been targeted largely at safeguarding provision for young people, with cuts particularly in part time provision typically focussed more on older people, the statistics at least until 2012/13 show only modest changes by age.

- For Scotland as a whole (Figure 17) the proportion studying all subjects who are under 25 has risen from 54.2% to 56.4%.
- In terms of subjects relevant to growth sectors there has been a decline in some sectors such as engineering, energy, food and drink in terms of the proportion of young people but with significant increases for sustainable tourism and ICT and digital.
- The figures for the SE area (Figure 18) show a very similar pattern.
- However, for the HIE area (Figure 19) the proportion of young people in all subject areas has grown more markedly (39.5% to 46.4%) with a major growth in energy, life sciences, chemical sciences and ICT and digital in the proportion of young people – but a big decline for financial and business services.

**Figure 23: % of Total Enrolments in Further Education by Age and Growth Sector, Scotland, 2010/11 to 2012/13**

	Under 25				25-64			
	2010/11	2011/12	2012/13	Change 2010/11 – 2012/13	2010/11	2011/12	2012/13	Change 2010/11 – 2012/13
<b>GES growth sectors</b>								
• Creative industries	59.7	57.3	58.5	↓	33.7	36.7	36.1	↑
• Energy	79.0	60.8	70.9	↓	21.0	39.2	25.8	↑
• Financial and business services	46.4	46.6	51.5	↑	53.1	53.1	48.2	↓
• Food and drink	58.4	57.3	51.0	↓	40.4	41.3	47.4	↑
• Life sciences	54.3	54.9	53.7	↓	45.2	44.5	45.6	↑
• Sustainable tourism	55.8	59.4	60.4	↑	43.3	39.9	38.9	↓
• Universities	-	-	-	-	-	-	-	-
<b>Other growth sectors</b>								
• Chemical sciences	81.4	86.6	84.9	↑	18.6	13.4	15.1	↓
• Construction	78.4	79.4	78.8	↑	21.3	20.3	20.9	↓
• Engineering	80.3	78.8	77.9	↓	19.5	21.0	21.8	↑
• ICT and digital technologies	37.0	40.8	42.5	↑	50.5	51.0	50.8	↑
<b>All subjects</b>	54.2	54.4	56.4	↑	42.6	43.4	41.6	↓

Source: Scottish Funding Council Infact Database

Notes:

- There are no college courses that specifically relate to universities.
- ↑: Sectors where there has been an increase in the representation of age band between 2010/11 and 2012/13.
- ↓: Sectors where there has been a decrease in the representation of age band between 2010/11 and 2012/13.

**Figure 24: % of Total Enrolments in Further Education by Age and Growth Sector, Scottish Enterprise Area, 2010/11 to 2012/13**

	Under 25				25-64			
	2010/11	2011/12	2012/13	Change 2010/11 – 2012/13	2010/11	2011/12	2012/13	Change 2010/11 – 2012/13
<b>GES growth sectors</b>								
• Creative industries	61.7	59.9	60.6	↓	32.0	34.7	34.7	↑
• Energy	80.8	58.7	74.8	↓	19.2	41.3	25.2	↑
• Financial and business services	46.8	46.9	51.9	↑	52.8	52.8	47.8	↓
• Food and drink	58.9	57.8	49.8	↓	39.9	40.8	48.4	↑
• Life sciences	54.3	54.7	53.1	↓	45.3	44.7	46.5	↑
• Sustainable tourism	56.9	60.6	62.6	↑	42.2	38.8	36.8	↓
• Universities	-	-	-	-	-	-	-	-
<b>Other growth sectors</b>								
• Chemical sciences	82.7	87.4	84.6	↑	17.3	12.6	15.4	↓
• Construction	80.3	81.2	80.7	↑	19.5	18.5	19.0	↓
• Engineering	80.4	78.8	77.9	↓	19.4	21.0	21.9	↑
• ICT and digital technologies	39.1	41.9	43.0	↑	48.8	50.2	50.5	↑
<b>All subjects</b>	55.5	55.5	57.4	↑	41.5	42.4	40.8	↓

Source: Scottish Funding Council Infact Database

Notes:

- There are no college courses that specifically relate to universities.
- ↑: Sectors where there has been an increase in the representation of age band between 2010/11 and 2012/13.
- ↓: Sectors where there has been a decrease in the representation of age band between 2010/11 and 2012/13.

**Figure 25: % of Total Enrolments in Further Education by Age and Growth Sector, Highlands and Islands Enterprise Area, 2010/11 to 2012/13**

	Under 25				25-64			
	2010/11	2011/12	2012/13	Change 2010/11 – 2012/13	2010/11	2011/12	2012/13	Change 2010/11 – 2012/13
<b>GES growth sectors</b>								
• Creative industries	31.6	29.4	33.8	↑	56.2	57.8	52.7	↓
• Energy	38.5	100.0	59.7	↑	61.5	0.0	33.8	↓
• Financial and business services	35.4	25.5	22.2	↓	64.6	74.5	77.8	↑
• Food and drink	53.8	52.3	56.5	↑	44.6	45.2	41.9	↓
• Life sciences	62.1	68.8	84.1	↑	37.9	31.3	15.9	↓
• Sustainable tourism	46.2	50.7	45.9		52.4	47.1	52.3	↓
• Universities	-	-	-	-	-	-	-	-
<b>Other growth sectors</b>								
• Chemical sciences	33.3	0.0	76.2	↑	66.7	100.0	23.8	↓
• Construction	63.3	66.4	64.2	↑	35.6	32.6	35.2	↓
• Engineering	77.1	77.2	78.9	↑	22.6	22.0	19.9	↓
• ICT and digital technologies	18.4	27.3	35.8	↑	66.7	59.4	55.1	↓
<b>All subjects</b>	39.5	42.8	46.4	↑	55.3	53.1	49.8	↓

Source: Scottish Funding Council Infact Database

Notes:

- There are no college courses that specifically relate to universities.
- ↑: Sectors where there has been an increase in the representation of age band between 2010/11 and 2012/13.
- ↓: Sectors where there has been a decrease in the representation of age band between 2010/11 and 2012/13.





– European Languages, Literature and related subjects	18.1	19.3	18.8	27.7	↑	81.9	80.7	81.2	72.3	↓
– Languages	45.8	51.0	50.0	38.0	↓	54.2	49.0	50.0	62.0	↑
• Universities										
<b>Other growth sectors</b>										
• Chemical sciences										
– Physical Sciences	56.9	59.5	60.1	62.9	↑	43.1	40.5	39.9	37.1	↓
• Construction										
– Architecture, Building and Planning	45.0	44.4	43.7	46.7	↑	55.0	55.6	56.3	53.3	↓
• Engineering										
– Engineering	54.6	53.1	56.0	55.9	↑	45.4	46.9	44.0	44.1	↓
• ICT and digital technologies										
– Mathematical and Computer Sciences	47.2	47.5	50.3	52.0	↑	52.8	52.5	49.7	48.0	↓
– Technologies	44.3	57.2	51.9	50.5	↑	55.7	42.8	48.1	49.5	↓
<b>All subjects</b>	34.0	35.7	38.0	38.6	↑	66.0	64.3	62.0	61.4	↓

Source: Scottish Funding Council

Notes:

- Includes entrants on Postgraduate, First Degree, Other Undergraduate and Further Education programmes.
- Data is only available for broad subject grouping and on a percentage basis. As such, it is not possible to calculate the proportion of HE entrants into subjects relevant to each growth sector.
- There are no HE courses that specifically relate to universities.
- ↑: Sectors where there has been an increase in the representation of age band between 2009/10 and 2012/13.
- ↓: Sectors where there has been a decrease in the representation of age band between 2009/10 and 2012/13.

## Other Research

In relation to age, there are a number of pieces of recent research that has been undertaken on the relationship between age and sectors.

### Composition of Workforce and Leadership

- Research by Close the Gap<sup>25</sup> into the renewable energy sector found that there were concerns that the renewable energy sector would not be able to meet the demand for skills as it grew, in part due to the ageing profile of the wider energy workforce. They suggested that there was unmet demand for graduates within the sector. Whilst graduates are not all 'young', the majority are suggesting there is potential to improve representation of young people within the sector.

<sup>25</sup> Close the Gap (2013). Fixing the Leaky Pipeline: Securing a Supply of Skills in Scotland's Renewable Energy Sector? Working Paper 7.

- Metcalf and Rolfe (2009)<sup>26</sup> note that the financial sector employs a relatively high percentage of people in the 25 to 39 age range and fewer at older ages.
- In the most recent Equality Challenge Unit report (2014)<sup>27</sup> into the higher education sector found that the age profile of the sector is different between nations of UK, with those aged under 30 accounting for 14% in Scotland, compared to 17% in England. In addition, they found that more than a third of professional and support staff were aged 66 and over. Looking at those aged 61 to 65, 25% worked in elementary occupations.
- In relation to the hospitality sector, the Institute of Hospitality (2011<sup>28</sup>) found that the percentage of older workers (aged 50 and over) is low. They projected that:
  - Younger workers, who traditionally consisted the largest age-group in the hospitality sector, are expected to decline in the future
  - Declines are also expected for workers aged 35-44 – the main ‘management’ cohort in hospitality
  - The largest increase in the workforce is expected to happen amongst those aged 50 and over.
- More generally, Kromydas et al. (2012<sup>29</sup>) found that there was no strong statistically significant relationship between changes in employment shares within industries and rates of labour force ageing. This is in contrast to the position in other countries (Han and Suen, 2011<sup>30</sup>).

### **Barriers to Entry or Progression in Growth Sectors**

- The Commission for Developing Scotland’s Young Workforce<sup>31</sup> found that the youth unemployment rate was 19%, twice that of the working age population as a whole. The Commission found that amongst the 50% of young people that do not go onto university, very few are offered the opportunity to gain vocational qualifications while at school, limiting their ability to make a successful transition into employment post-school. Whilst not specifically focused on the growth sectors, it suggested that the growth of these sectors provided opportunities for young people.
- Arts Council England argues that the dominance of small and medium sized enterprises in the sector is one of the key reasons young people are struggling to access employment in the sector. In particular, the focus on unpaid internships deters young people from entering the sector and leads to a less diverse sector (in terms of disability, social class and ethnicity) than would otherwise be the case. As a result, the pool of prospective young people entering the arts and cultural sectors will become even more homogenous which in turn will affect the art that is produced, distributed and attended by the wider population. Whilst this relates to England, the Scottish position is likely to be similar.

<sup>26</sup> Metcalf, H and Rolfe, H. (2009) *Employment and earnings in the finance sector: A gender analysis*. Equality and Human Rights Commission Research, Research report: 17

<sup>27</sup> Equality Challenge Unit (2014) *Equality in higher education: statistical report 2014 Part 1: staff*.

<sup>28</sup> Institute of Hospitality (2011). *The case for recruiting and retaining older workers: a business imperative for the Hospitality sector*. Knowledge Pack.

Available at: [https://www.instituteofhospitality.org/Knowledge\\_Pack\\_HOSPITALITY\\_Dec2011\\_v2](https://www.instituteofhospitality.org/Knowledge_Pack_HOSPITALITY_Dec2011_v2)

<sup>29</sup> Kromydas, T., Lockyer, C and Wright, R. (2012) “Ageing industries”. *Fraser of Allander Economic Commentary*, 36 (1). pp. 89-94.

<sup>30</sup> Han, J. and W. Suen, (2011), “Age Structure of the Workforce in Growing and Declining Industries: Evidence from Hong Kong”, *Journal of Population Economics*, vol. 24, pp. 167-189

<sup>31</sup> Arts Council England (date unknown). *Arts Council England Equality Proforma*

- A House of Commons Cross-Party Parliamentarians' Inquiry in 2014<sup>32</sup> found that the key barriers to young people gaining employment in construction are the cyclical nature of the sector (with the recent recession leading to layoffs and a reduction in apprenticeship training) and the culture of sub-contracting. The latter means the sector is dominated by SMEs who can have less capacity to take on young people as apprentices to train them than larger firms.
- An issue facing a number of the growth sectors (energy, life sciences, universities, chemical sciences, engineering and construction) is the perception of science amongst young people. Research by the Wellcome Trust<sup>33</sup> found that generally young people in school enjoyed and had an interest in science. Those young people that were most engaged in school tended to have the most positive views of science. However, some are put off from pursuing science subjects as they are seen as being more content heavy than other subjects and some feel the science curriculum is insufficiently connected to contemporary life. In addition, many felt that science did not help them develop the technical skills they may need for a career in a science-related sector.

### **Pay, Earnings and In-work Poverty**

- Pay gaps are primarily measured for gender. However, in 2009, Metcalf<sup>34</sup> examined pay gaps across a number of equality groups on behalf of the Equalities and Human Rights Commission. In relation to age, she found that 40-49 year olds had the highest wages. Compared to this age band, 16-17 year olds had a wage gap of 66%, 18-21 year olds had a gap of 53% and 22-29 year olds had a gap of 29%. However, care must be taken here as age is unlike other protected characteristics in that we would expect wages to increase with age as individuals become more experienced and skilled. Pay gaps also exist for older workers, with the gap 6% for 50-59 year olds (compared to the 40-49 year old group) and 20% for those aged 60 and over. No analysis on a sectoral basis is available and there appears to have been no further research that has been undertaken on this topic since 2009.
- Research by the Resolution Foundation<sup>35</sup> found that zero hours contracts are most common amongst young people, with 37% of zero hours contracts held by those aged 16-24 (despite accounting for just 12% of the workforce and survey sample). Zero hours contracts are most commonly used in health and social work (where 20% of employees are estimated to be on zero hours contracts), hospitality (19%), administration (12%), retail (11%), arts, entertainment and leisure (8%). Linking these to the growth sectors, this suggests that tourism and creative industries are those sectors most likely to be using zero hours contracts. Research undertaken by BIS<sup>36</sup> similarly found that the broad category of 'distribution, accommodation and food services' within which tourism activities sit had the second highest rate of use of zero hours contracts (with just under 30% of those working in sector being on zero hours contracts). This research also found that 15% of those working in business services were on a zero hours contract.

<sup>32</sup> House of Commons Cross-Party Parliamentarians Inquiry (2014). *No More Lost Generations: Creating Construction Jobs for Young People*.

<sup>33</sup> Wellcome Trust (2011). *Exploring Young People's Views on Science Education*.

<sup>34</sup> Metcalf, H. (2009). *Pay Gaps Across the Equality Strands: A Review*.

<sup>35</sup> Pennycook, M., Cory, G. and Alakeson, V. (2013). *A Matter of Time. The Rise of Zero-Hours Contracts*. Resolution Foundation.

<sup>36</sup> Department for Business Innovation and Skills (BIS) (2013). *Zero Hours Employment Contracts. Consultation*.

- Research by the Joseph Rowntree Foundation<sup>37</sup> found 1.8 million of those earning less than the LW are under 30 – with this age group concentrated in hotels, bars and restaurants jobs. In contrast 57% of low paid jobs in the public sector (600,000 jobs) are done by employees aged 40 or over.
- IPPR and the Resolution Foundation<sup>38</sup> found that 76% of 16-20 year olds earn below the Living Wage, compared to 27% of 21-30 year olds, 13% of 31-40 year olds, 14% of 41-50 year olds, 15% of 51-60 year olds and 23% of those aged 60 and over. Industries with highest proportion of employees earning less than the Living Wage are hotels and restaurants (were 68% of employees earn less than the Living Wage), wholesale and retail (38%), administration (37%) and arts (36%). This would suggest tourism and the creative industries are the sectors with the largest proportion of staff earning less than the Living Wage.
- A study into the ‘low-pay, no-pay’ cycle<sup>39</sup> undertaken on behalf of the Joseph Rowntree Foundation found that 16-24 year olds had a very high level of transitions out of low paid work into unemployment compared to other age bands, reflecting the high rates of temporary work undertaken by young people while they build their skills and search for permanent work opportunities. Whilst not specific to young people, the sectors most commonly associate with the low-pay, no-pay cycle were manufacturing, utilities, transport and communications and business services.

### **Recognition of Age within Assessments of Sector Needs**

- In his review of industry statements on skills needs and shortages, Sosenko<sup>40</sup> found that many analysed the age profile of their sectors – with a particular focus on the representation of young people within the sector. However, the extent to which there were recommendations on how to utilise young workers to tackle skill shortages was more mixed. At a sector level:
  - A review of *Energy Production and Utilities: Skills Sector Assessment* published by UKCES<sup>41</sup> found that the technical and engineering workforce in energy is older than average leading to high replacement demand. However, as the number of young people is declining, there will be increasing competition for good quality candidates to replace those leaving the sector.
  - The *Skills Investment Plan for Scotland’s Food and Drink Sector*<sup>42</sup> highlights the need to attract more young people into the sector going forward.
  - Semta’s *Science Industries (Bioscience): Sector Skills Assessment UK*<sup>43</sup> highlighted the ageing of the workforce as a key challenge for the sector with the need to look at recruitment practices to bring individuals into the sector. One of suggestions made is in relation to encouraging older workers from other sectors to consider moving into bioscience. Another skills assessment, from Cogent, Semta and Skills for Health<sup>44</sup> suggested that a key challenge for life sciences is to secure good quality candidates from higher education – with a particular focus on those that have studied physical and life science subjects. Whilst not all of these will

<sup>37</sup> Joseph Rowntree Foundation (2013). *Monitoring Poverty and Social Exclusion*.

<sup>38</sup> IPPR and Resolution Foundation (2013). *Beyond the Bottom Line: The Challenges and Opportunities of a Living Wage*.

<sup>39</sup> Thompson, S. (2015). *The Low-Pay, No-Pay Cycle*. JRF Programme Paper. Joseph Rowntree Foundation.

<sup>40</sup> Sosenko, F. (2013). *Analysis of Industry Statements on Skills Needs and Shortages*.

<sup>41</sup> Murphy, R., Bennett, S. and Challis, A. (2012). *Energy Production and Utilities: Skills Sector Assessment*.

<sup>42</sup> Skills Development Scotland (2012). *Skills Investment Plan for Scotland’s Food and Drink Sector*

<sup>43</sup> Semta (2010). *Science Industries (Bioscience): Sector Skills Assessment UK*

<sup>44</sup> Cogent, Semta and Skills for Health (2009). *Life Sciences and Pharmaceutical: A Future Skills Review with Recommendations to Sustain Growth in Emerging Technologies*.

be young people, the majority will be. In addition, this assessment makes recommendations to encourage greater use of higher level apprenticeships – again a route into the sector targeted primarily at young people.

- Tourism is flagged up as being unusual in that young people account for a large proportion of the workforce.

### **Occupational Profile**

- Whilst there is undoubtedly a difference in the occupations undertaken by young and older workers (with, in particular, young people more likely to be in entry level roles), we have identified only one study that specifically examines this in relation to the growth sectors.
- The Institute of Hospitality (2011) found that there was a different pattern of employment of different age bands across different sub-sectors, with young people concentrated in the pubs, bars and nightclubs sub-sector. Young people are less common in hotels and restaurants, where older groups are more common.

### **Views of Key Consultees**

To gather some additional perspectives on these issues, The Age and Employment Network (TAEN) was interviewed. The key issues they raised were as follows.

- The key issue that older workers face in relation to the labour market is getting back into employment if they are out of work. Whilst employers do not explicitly discriminate on age, it is felt that there is a strong degree of hidden discrimination.
- At a very basic level, the language used in job advertisements can appear to indicate a preference for younger workers ('energetic', 'go-getting', etc.).
- Employers often have particular concern in relation to their health of older workers and their physical fitness to do the job.
- A further issue can be perceptions about what kinds of jobs older people would be willing to do. In particular, that individuals will be unwilling to fill 'entry-level' positions. The reality is, however, that older people are extremely diverse in their needs and a wide range of roles will be suitable for them.
- An additional issue is the design of jobs – with the focus on full-time positions. If jobs were designed in a more flexible way, then many more jobs would be suitable for older workers. On this, the UK is considered to be lagging a number of other EU countries including Germany and the Netherlands, where employers are adopting 'age management' models that enable individuals to stay in employment for longer and/or to change careers in later life.
- Turnover rates tend to be lower amongst older workers, as does sickness absence. However, the prevalence of serious illnesses is higher than within younger workers.
- There are limited policy interventions targeted at improving the skills and employability of older workers.
- In terms of specific sectors:
  - Financial and business services is considered to be particularly difficult to enter as an older worker – with the sector primarily recruiting young people and developing their careers in-house.
  - Food and drink is thought to have challenging conditions (in terms of long hours, shift work, physically strenuous), making it a more difficult sector for older workers.

- There were no obvious barriers in relation to older workers working in tourism but was felt that the sector preferred younger workers.
- In relation to construction, a key challenge is that a large number of older workers left the industry during the recession. Despite facing skills shortages, employers are often reluctant to rehire these individuals. In addition, it was noted that this sector tends to only recruit young people as new entrants into the sector (e.g. as apprentices).
- Whilst not a growth sector, TAEN did highlight that there was potential to utilise the skills and capabilities of older workers in tackling skills shortages in specialist areas of manufacturing.

### Key Messages

1. Young people account for 12% of all employees – but only 2% of the self-employed. In contrast, older people accounted for 21% of employees and 38% of the self-employed.
2. In terms of young people:
  - They are significantly over-represented within the tourism workforce – way they account for 34% of all employees. They are also over-represented in the food and drink sector – but by a much smaller margin.
  - Young people are under-represented in the workforce of all of the other growth sectors. This may reflect the fact that many require graduate level qualifications limiting the number of young people that are qualified for the sectors.
  - As young people account for the majority of those undertaking MAs and college and university courses, there are no clear trends in terms of the future supply of individuals to these growth sectors.
3. In terms of older people:
  - They are over-represented in the workforce of universities and engineering sectors.
  - They are under-represented in the workforce of most growth sectors, with them accounting for a particularly low level of employees in the financial and business services, tourism, chemical sciences and ICT and digital technologies workforce.
  - They account for between 31% and 48% of the self-employed in each growth sector and between 12% and 36% of all company directors in each growth sector.
  - The sectors with the highest proportion of self-employment by older people are food and drink and tourism.
4. The decline in the representation of young people in 5 of the growth sectors, coupled by the increase in part-time employment from this group would seem to reinforce the evidence from elsewhere that young people are struggling to access good quality employment opportunities as a result of the recession. This suggests greater focus is required to ensure that clear and accessible routes into these sectors are in place and being promoted to young people.
5. Similarly, the decline in the representation of older people in 6 of the growth sectors, combined with increases in part-time and self-employment may be an indication that older people are struggling to find full-time employment in these sectors. However, alternatively, this

may reflect the increasing flexibility of the labour market and the ability for older workers to continue to work in non-traditional forms within the sectors.

## 4. DISABILITY PROFILE OF GROWTH SECTORS

### Introduction

At the time of the 2011 Census

- 10% said they had a long-term limiting illness or disability that affected their day-to-day activities ‘a lot’
- A further 10% said they had a long-term limiting illness or disability that affected their day-to-day activities ‘a little’
- SE rates were at national average; HIE rates were 8% and 11% respectively.

The Annual Population Survey does not contain data on the numbers with a disability but it does capture the numbers with a health problem that has lasted more than 12 months. This category is likely to include a much larger proportion of the population than a definition that included only those with disabilities. The more recent Annual Population Survey analysis shows that the percentage of individuals with a health problem that has lasted more than 12 months, account for:

- 25% of all employees and 33% of all self-employed in Scotland.
- The figures for the HIE area are lower at 21% for employees with no estimate available for the self-employed.

In general, disabled people tend to be underrepresented within surveys – as they may choose not to identify themselves as having a disability. However, the wording of the APS question, namely “whether they have a health problem lasting more than 12 months” combined with the fact this survey is not employer-based may result in this being less of an issue than in other surveys.

### Employment

Figure 27 shows that of employees in each growth sector in 2013, people with a long term health issue were:

- At the Scottish level clearly over-represented in creative industries, universities, chemical sciences, construction and ICT and digital and clearly under-represented only in energy.
- The position in the HIE area is that a lower percentage across all the sectors for which data are available were drawn from people with a health problem lasting more than 12 months – but the incidence of disability in the working age population is also slightly lower.

Since 2009:

- The proportions with a health problem lasting more than 12 months have grown in creative industries, financial and business services, food and drink, chemical sciences, construction and ICT and digital with a marginal increase in engineering. The growth has been particularly marked in creative industries, construction and ICT and digital where the proportion has grown by in excess of 50%.
- Declining proportions are evident in energy, sustainable tourism and universities.
- Comparing the SE and HIE areas, there is a significant growth for construction in line with the trend in the SE area.



**Figure 27: Individuals with a Health Problem Lasting More Than 12 Months as % of Total Employees in Growth Sectors, 2009-2013**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>GES growth sectors</b>									
• Creative industries	18.9	26.0	↑	19.0	27.3	↑	-	-	-
• Energy	21.9	15.5	↓	21.9	16.4	↓	22.0	12.5	↓
• Financial and business services	19.5	20.6	↑	19.4	21.0	↑	20.2	-	-
• Food and drink	17.7	20.9	↑	18.9	22.5	↑	13.9	-	-
• Life sciences	23.7	-		23.1	-	-	-	-	-
• Sustainable tourism	20.9	19.8	↓	21.5	22.9	↑	17.3	4.8	↓
• Universities	22.3	21.4	↓	22.3	19.1	↓	-	-	
<b>Other growth sectors</b>									
• Chemical sciences	21.4	23.7	↑	20.7	26.5	↑	-	-	-
• Construction	20.3	24.8	↑	21.2	25.6	↑	14.0	19.4	↑
• Engineering	20.3	20.5	↑	20.2	20.8	↑	21.3	-	-
• ICT and digital technologies	18.1	28.6	↑	16.5	25.6	↑	-	-	-
<b>All industries</b>	22.5	25.0	↑	22.8	25.6	↑	20.9	20.8	↓

Source: Annual Population Survey

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of individuals with a health problem lasting more than 12 months between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of individuals with a health problem lasting more than 12 months between 2009 and 2013.

In 2013, 31% of employees with a health problem lasting more than 12 months were working part-time. This was a slight increase on the 2009 rate. The proportion of employees with a health problem lasting more than 12 months that are working part-time is higher in the Highlands and Islands Enterprise area than the Scottish Enterprise area (38% compared to 30%).

- There is limited data available for specific growth sectors, reflecting the small number of individuals with a health problem lasting more than 12 months in each growth sector in the 2013 APS.
- In terms of the sectors where data is available, in 3 cases the proportion of employees with a health problem lasting more than 12 months that are working part-time is below the average for the economy as a whole (9% of engineering, 12% of construction and 17% of financial and business services) and in the other one – tourism – the proportion was significantly higher at 44%.

**Figure 28: Individuals with a Health Problem Lasting More Than 12 Months Working Part-time as % of Individuals with a Health Problem Lasting More Than 12 Months that are Employees in Growth Sectors, 2009 and 2013**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>GES growth sectors</b>									
• Creative industries	36.9	-	-	35.0	-	-	-	-	-
• Energy	9.6	-	-	8.5	-	-	-	-	-
• Financial and business services	25.8	16.7	↓	25.4	17.3	↓	-	-	-
• Food and drink	10.2	-	-	10.1	-	-	-	-	-
• Life sciences	-	-	-	-	-	-	-	-	-
• Sustainable tourism	41.4	43.8	↑	41.4	45.7	↑	-	-	-
• Universities	26.9	-	-	27.0	-	-	-	-	-
<b>Other growth sectors</b>									
• Chemical sciences	0.0	-	-	-	-	-	-	-	-
• Construction	5.8	12.3	↑	6.4	13.7	↑	-	-	-
• Engineering	7.6	8.6	↑	4.8	9.1	↑	-	-	-
• ICT and digital technologies	-	-	-	-	-	-	-	-	-
<b>All industries</b>	28.7	30.9	↑	28.2	30.0	↑	32.8	38.1	↑

Source: Annual Population Survey

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of individuals with a health problem lasting more than 12 months between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of individuals with a health problem lasting more than 12 months between 2009 and 2013.

Between 2009 and 2013, there was a change in who was asked the question on the health problems lasting more than 12 months, meaning that it is not possible to compare the proportion of part-time employees over time on a robust basis.

### Self-Employment

Figure 29 shows the proportion of self-employed people in the growth sectors reporting a health problem lasting more than 12 months in 2013.

- The proportions are particularly high in food and drink, creative industries and financial and business services at the Scottish level.

- There are no figures for the HIE area due to sample size limitations.

Since 2009:

- Growth has been recorded in all of the sectors where data are available for 2009 and 2013, but is particularly marked in food and drink. However, this pattern of growth is evident for all industries across Scotland with an increase from a quarter to a third of the percentage of self-employed with a health problem lasting more than 12 months.

**Figure 29: Individuals with a Health Problem Lasting More Than 12 Months as % of Total Self-employment in Growth Sectors, 2009-2013**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>GES growth sectors</b>									
• Creative industries	27.3	31.9	↑	25.4	34.1	↑	-	-	-
• Energy	25.5	-	-	30.0	-	-	-	-	-
• Financial and business services	24.3	30.9	↑	24.6	32.0	↑	-	-	-
• Food and drink	29.1	41.0	↑	30.0	50.0	↑	27.0	-	-
• Life sciences	-	26.8	-	-	-	-	-	-	-
• Sustainable tourism	24.1	-	-	20.8	25.0	↑	34.3	-	-
• Universities	-	-	-	-	-	-	-	-	-
<b>Other growth sectors</b>									
• Chemical sciences	-	-	-	-	-	-	-	-	-
• Construction	22.6	26.0	↑	21.9	25.3	↑	27.1	-	-
• Engineering	26.8	-	-	28.1	-	-	-	-	-
• ICT and digital technologies	20.0	-	-	19.4	-	-	-	-	-
<b>All industries</b>	25.0	33.4	↑	24.5	32.9	↑	27.3	-	-

Source: Annual Population Survey

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of individuals with a health problem lasting more than 12 months between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of individuals with a health problem lasting more than 12 months between 2009 and 2013.

### Modern Apprenticeships

According to Skills Development Scotland statistics, the representation of individuals self-reporting a disability as Modern Apprentices in 2013/14:

- Was very low with an average of 0.4% across all industries.
- Varied across the growth sectors from none in the life sciences to 1.7% in creative industries.

Whilst the percentage of MAs self-reporting a disability has remained broadly similar since 2009/10 (varying between 0.3% and 0.4%), the absolute numbers have been increasing. For example, the number of MAs that self-reported a disability increased from 71 in 2012/13 to 92 in 2013/14.

Two reasons may explain the very low representation of disabled people within Modern Apprenticeship starts.

- As we saw in Chapter 3, under 25s are the largest group of MA starts, and this group is less likely to suffer from long term illnesses and to a lesser extent from disabilities.
- Every Modern Apprenticeship start is asked as part of the enrolment/registration process whether they have a disability. During the period covered by Figure 30, SDS only asked for self-declaration of a disability in relation to the legal definition. The data does not explicitly include those reporting any additional support or learning needs. As a result, the data presented here is likely to be an underestimate. It should be noted that this is different from the approach taken in relation to college enrolments, university entrants and the reporting requirements of apprenticeships in the rest of the UK.

**Figure 30: Individuals Self-Reporting a Disability as % of Total Modern Apprenticeship Starts by Growth Sector, Scotland, 2009/10-2013/14**

	2009/10	2010/11	2011/12	2012/13	2013/14	Change 2009/10 – 2013/14
<b>GES growth sectors</b>						
• Creative industries	0.0	1.9	0.0	0.0	1.7	↑
• Energy	0.5	0.0	0.0	0.0	0.3	↓
• Financial and business services	0.0	0.0	0.0	0.5	0.2	↑
• Food and drink	0.1	0.3	0.1	0.0	0.4	↑
• Life sciences	0.0	0.0	0.0	0.0	0.0	-
• Sustainable tourism	0.5	0.2	0.3	0.1	0.2	↓
• Universities						
<b>Other growth sectors</b>						
• Chemical sciences	0.0	0.0	0.0	-	-	-
• Construction	0.6	0.6	0.2	0.4	0.5	↓
• Engineering	0.6	0.2	0.6	0.3	0.6	-
• ICT and digital technologies	0.0	1.1	1.2	0.4	0.4	↑
<b>All industries</b>	0.5	0.3	0.3	0.3	0.4	↓

Source: Skills Development Scotland

Notes:

- There are no MAs that specifically relate to universities.
- Appendix 2 provides details of which frameworks have been allocated to each growth sector.
- ↑: Sectors where there has been an increase in the representation of disabled people between 2009/10 and 2013/14.
- ↓: Sectors where there has been a decrease in the representation of disabled people between 2009/10 and 2013/14.

### Business Leadership

Data is not available from FAME or any other source on business leadership by disabled people.

### Education and Training

#### College Enrolments

According to Scottish Funding Council statistics, the representation of disabled people studying subjects relevant to the growth sectors in Scotland in 2012/13 was:

- Less than 8% for engineering and financial and business services rising to 14% or more for creative industries and ICT and digital technologies.
- There are some variations between the SE and HIE areas with, for example, sustainable tourism in the HIE area reporting nearly a third of students with disabilities.

Since 2010/11, for all subjects across Scotland, as well as the SE and HIE areas, the percentage of students with disabilities has remained largely unchanged. However:

- In the growth industries there has been some expansion in energy, food and drink, life sciences, chemical sciences and construction.
- In the HIE area the figures for energy have declined significantly but from a very high base.

As with Modern Apprenticeship data, students do not have to disclose a disability when enrolling at college. However, given the relatively high proportion of students declaring a disability, there is no reason to suggest there is a systematic under-representation.

**Figure 31: Disabled People as % of Total Enrolments in Further Education by Growth Sector, Scotland, 2010/11 to 2012/13**

	Scotland				Scottish Enterprise				Highlands and Islands			
	2010/11	2011/12	2012/13	Change 2010/11 – 2012/13	2010/11	2011/12	2012/13	Change 2010/11 – 2012/13	2010/11	2011/12	2012/13	Change 2010/11 – 2012/13
<b>GES growth sectors</b>												
• Creative industries	14.1	14.1	14.7	↑	13.6	14.1	14.8	↑	27.3	21.5	19.7	↓
• Energy	6.0	7.4	8.6	↑	5.1	5.3	8.0	↑	40.0	42.1	23.8	↓
• Financial and business services	7.3	7.3	7.8	↑	7.2	7.3	7.8	↑	22.5	23.8	20.8	↓
• Food and drink	10.8	12.1	13.4	↑	10.4	11.8	13.3	↑	18.2	18.4	16.1	↓
• Life sciences	8.3	9.9	9.2	↑	8.3	9.9	8.8	↑	27.0	31.3	31.6	↑
• Sustainable tourism	11.0	11.6	12.2	↑	10.3	11.7	11.8	↑	19.6	14.3	17.8	↓
• Universities	-	-	-	-	-	-	-	-	-	-	-	-
<b>Other growth sectors</b>												
• Chemical sciences	6.7	8.0	8.8	↑	6.8	8.0	8.5	↑	0.0	0.0	35.7	↑
• Construction	10.1	10.9	11.5	↑	10.0	11.1	11.8	↑	12.5	10.7	11.2	↓
• Engineering	7.8	7.8	7.7	↓	7.6	7.6	7.5	↓	15.8	14.4	16.5	↑
• ICT and digital technologies	16.5	16.9	16.0	↓	16.4	16.7	15.8	↓	17.4	20.7	19.4	↑
<b>All subjects</b>	12.6	12.7	13.0	↑	12.5	12.7	13.0	↑	16.7	15.6	16.2	↓

Source: Scottish Funding Council Infact Database

Notes:

- There are no college courses that specifically relate to universities.
- ↑: Sectors where there has been an increase in the representation of disabled people between 2010/11 and 2012/13.
- ↓: Sectors where there has been a decrease in the representation of disabled people between 2010/11 and 2012/13.



### University Entrants

According to Scottish Funding Council statistics, 9.3% of higher education students had a disability. For those studying subjects relevant to the growth sectors in Scotland in 2012/13 the picture was as follows:

- At the lower end of the range, 5% or less of those studying medicine and dentistry, and languages had disabilities.
- At the upper end of the range we see 12% or more students with disabilities studying mathematics and computer sciences and creative arts and design.

Since 2009/10 the proportions of students with disabilities rose quite markedly across the science, maths, computer science and technology areas.

There is no breakdown of statistics between SE and HIE areas. As with other datasets, university entrants are not required to declare a disability and therefore, the figures may be an under-representation. However, as the majority of university entrants are under 21, there is likely to be a lower level of long-term illnesses within this cohort, and to a lesser degree, disabilities.

**Figure 32: Disabled People as % of Total University Entrants, All Scottish Domiciled Students, 2009/10 to 2012/2013**

	2009/10	2010/11	2011/12	2012/13	Change 2009/10 – 2012/13
<b>GES growth sectors</b>					
• Creative industries					
– Creative Arts and Design	13.5	12.3	13.7	13.4	↓
• Energy					
– Physical Sciences	8.8	9.8	9.5	10.3	↑
– Engineering	5.7	6.4	6.3	7.0	↑
• Financial and business services					
– Law	5.9	7.0	6.6	8.5	↑
– Business and Administrative studies	6.0	7.0	7.2	7.6	↑
• Food and drink					
– Veterinary Sciences, Agriculture and related subjects	15.5	11.1	9.9	8.7	↓
• Life sciences					
– Medicine and Dentistry	5.4	4.1	6.0	4.0	↓
– Biological Sciences	9.4	9.0	9.6	10.5	↑
– Veterinary Sciences, Agriculture and related subjects	15.5	11.1	9.9	8.7	↓

• Sustainable tourism					
– European Languages, Literature and related subjects	7.7	8.0	6.1	7.8	↑
– Languages	8.1	7.7	4.1	1.3	↓
• Universities					
<b>Other growth sectors</b>					
• Chemical sciences					
– Physical Sciences	8.8	9.8	9.5	10.3	↑
• Construction					
– Architecture, Building and Planning	8.4	8.8	9.0	7.9	↓
• Engineering					
– Engineering	5.7	6.4	6.3	7.0	↑
• ICT and digital technologies					
– Mathematical and Computer Sciences	11.6	11.8	11.2	12.8	↑
– Technologies	8.3	8.1	10.8	11.0	↑
<b>All subjects</b>	8.2	8.1	8.3	9.3	↑

Source: Scottish Funding Council

Notes:

- Includes entrants on Postgraduate, First Degree, Other Undergraduate and Further Education programmes.
- Data is only available for broad subject grouping and on a percentage basis. As such, it is not possible to calculate the proportion of HE entrants into subjects relevant to each growth sector.
- There are no HE courses that specifically relate to universities.
- ↑: Sectors where there has been an increase in the representation of disabled people between 2009/10 and 2012/13.
- ↓: Sectors where there has been a decrease in the representation of disabled people between 2009/10 and 2012/13.

## Other Research

There is limited recent research on the relationship between disability and sectors. Some key findings include:

### *Composition of Workforce and Leadership*

- Coleman et al (2013)<sup>45</sup> found that the sector that employs most disabled people is public administration, education and health sector (34%) following by distribution, hotels and restaurants (18%) and banking and finance (15%). The construction sector was ranked sixth where it employs 8% of all disabled people in employment.

<sup>45</sup> Coleman N., Wendy Sykes, W. and Groom, C, (2013) *Barriers to employment and unfair treatment at work: a quantitative analysis of disabled people's experiences*. Equality and Human Rights Commission

- Research undertaken on behalf of the Equality and Human Rights Commission found that the proportion the profile of disabled people across sectors is very similar to that of non-disabled people. For example, 18% of disabled people work in distribution, hotels and restaurants (which is aligned with tourism) compared to 19% of non-disabled people, 15% of disabled people work in banking and finance compared to 17% of non-disabled people, 7% work in construction (compared to 8% of non-disabled) and 2% work in energy and water, the same proportion as the non-disabled.
- Skillset (2012)<sup>46</sup> conducted a research where the employment composition of the creative media industries (such as film, TV and animation) was analysed. They found that disabled workers accounted for just 1% of the workforce in 2012 – a similar rate to previous censuses undertaken in 2006 and 2009.
- The statistical report conducted by the Equality Challenge Unit (2014)<sup>47</sup> into higher education found that the proportion of disabled people has increased from 2.2% in 2003/04 to 3.9% in 2012/13.

### **Barriers to Entry or Progression in Growth Sectors**

- The Campaign for Science and Engineering (which has relevance to the energy, life sciences, universities, chemical sciences, construction, engineering and ICT and digital technologies sectors) found<sup>48</sup> that there had been significant progress in terms of improving the representation of disabled people in STEM education and employment. However, key issues remain including improving funding for disabled young people wishing to pursue STEM through higher education or Modern Apprenticeships, ensuring disabled students are encouraged to consider careers in STEM fields and encouraging better monitoring of the topic.
- The Commission for Developing Scotland's Young Workforce<sup>49</sup> found that disabled young people are more likely to be offered a more limited range of education and training opportunities than other young people, despite having similar career aspirations as other young people at age 16. The Commission flags up the low levels of disabled young people accessing Modern Apprenticeships as a particular area of concern (although as MAs are employed they can access Access to Work funds). The Commission suggests that it is a lack of practical support for disabled young people that underpins their poor labour market transitions – and makes a series of recommendations about how this could be improved:
  - *“Career advice and work experience for young disabled people who are still at school should be prioritised and tailored to help them realise their potential and focus positively on what they can do to achieve their career aspirations.*
  - *Funding levels to colleges and MA training providers should be reviewed and adjusted to reflect the cost of providing additional support to young disabled people, and age restrictions should be relaxed for those whose transition may take longer.*
  - *Within Modern Apprenticeships, SDS should set a realistic but stretching improvement target to increase the number of young disabled people. Progress against this should be reported on annually.*
  - *Employers who want to employ a young disabled person should be encouraged and supported to do so.”* Skills Development Scotland can provide Employer Recruitment Incentive (ERI) payments of up to £1,500 to employers who recruit a targeted young

<sup>46</sup> Creative SkillsSet (2012) *Employment Census of the Creative Media Industries*.

<sup>47</sup> Equality Challenge Unit (2014) *Equality in higher education: statistical report 2014 Part 1: staff*.

<sup>48</sup> Campaign for Science and Engineering (2014). *Improving Diversity in STEM*.

<sup>49</sup> Commission for Developing Scotland's Young Workforce (2014). *Education Working for All!* Edinburgh: Scottish Government.

person (TYP) as a Modern Apprentice or into employment of 15 hours or more per week – including those aged 16-24 with a disability.

### **Pay, Earnings and In-work Poverty**

- Pay gaps are primarily measured for gender. However, as outlined earlier, in 2009 Metcalf<sup>50</sup> examined pay gaps across a number of equality groups on behalf of the Equalities and Human Rights Commission. In relation to disability, she found that the disability pay gap appeared to be between 6% and 26% for men and 6% and 17% for women, depending on the definition of disability used. The main causes of the gap are thought to be the different characteristics of disabled and non-disabled people (with disabled people being more likely to be older, less educated, to be in lower level jobs and to have greater sickness absence). The research did not look at this issue on sectoral basis and there does not appear to have been any further research on this topic since 2009.
- Research from the Joseph Rowntree Foundation<sup>51</sup> found that disabled people are more likely to be workless (unemployed or economically inactive) than non-disabled people – even when other factors such as qualification levels are taken into account. When they are in work, they are more likely to be low paid than non-disabled people with, for example, 16% of disabled people with a Level 3 qualification being low paid, compared to 13% of non-disabled people.

### **Recognition of Disability within Assessments of Sector Needs**

- In a review of industry statements on skills needs and shortages published by the Sector Skills Councils, Scottish Government, Skills Development Scotland, Scottish Enterprise and Highlands and Islands Enterprise, Sosenko<sup>52</sup> found that whilst data was available on the representation of disabled people across sectors and that some skills assessments presented this, none made an explicit recommendation in terms of the sector needing to increase the number of disabled workers within it in order to tackle the skill shortages it faces. This is in stark contrast to gender, where a number of the skills assessment documents made recommendations to increase female representation.

### **Occupational Profile**

- There appears to be limited research available on occupational profile within sectors for disabled people. However this does not mean this is not an issue – just that it has to date been a limited area of interest to researchers.
- Research by the Equality Challenge Unit (2014) into the higher education sector found that disabled people are more common within professional and support staff (4.5%) than academic staff (3.4%).

### **Views of Key Consultees**

To gather some additional perspectives on these issues, the Operations Manager for Employability at Capability Scotland was interviewed. Key issues that were identified include:

<sup>50</sup> Metcalf, H. (2009). *Pay Gaps Across the Equality Strands: A Review*.

<sup>51</sup> Joseph Rowntree Foundation (2013). *Monitoring Poverty and Social Exclusion*.

<sup>52</sup> Sosenko, F. (2013). *Analysis of Industry Statements on Skills Needs and Shortages*.

- Society's attitude towards people who are disabled – many people assume that disabled people are unable to work.
- Linked to this, there is a lack of visible role models of disabled people in the workplace, schools or in careers information. A key issue here is that many disabilities are 'invisible' and are therefore not immediately obvious someone else.
- From an employer's perspective, the key issue is understanding the extent to which the individual has the capacity to do the job under consideration and the likely impact of the person's disability, if any (for example, can the employer make reasonable adjustments to enable the person to do the job, what are the potential health and safety implications, and what support is available to help employers to hire a disabled person etc.)
- There is a lack of evidence on access to training and progression routes taken by disabled people once they are within the workforce.
- In relation to the growth sectors:
  - There are no visible role models of disabled people working within most of the growth sectors (e.g. energy, chemical sciences, food and drink) and this may discourage disabled people from considering them as a realistic employment option. Again this lack of role models may be partly due to the issue of 'invisible' or 'hidden' disabilities which people may or may not have disclosed.
  - Employers may be unaware of the support that is available to them to help them make the reasonable adjustments needed to employ someone with a physical disability.
  - Issues around access to education may mean that some disabled people have not had the opportunity to study for the specialist qualifications required to work in these fields.
  - There is also a lack of case studies or success stories of organisations within these growth sectors who can demonstrate how employing a disabled person has worked for them.

### Key Messages

1. 25% of employees have a health problem lasting more than 12 months, as do 33% of the self-employed.
2. In terms of the growth sectors:
  - Individuals with a health problem lasting more than 12 months are under-represented in the workforce of all growth sectors except ICT and digital technologies. However, the proportion of the workforce with a health problem lasting more than 12 months has increased in 7 of the growth sectors since 2009.
  - There is no clear picture in relation to self-employment – although limited data availability in relation to 2013 has complicated the picture here.
  - Very few individuals starting a Modern Apprenticeships self-reported a disability. However, SDS is currently undertaking work to match databases and this would seem to indicate that there is under-reporting of disabilities amongst MAs. SDS will report progress on this work in summer 2015.
  - Whilst a higher proportion of college enrolments and university entrants reported a disability, there was no clear pattern across growth sectors.
3. In 2009, individuals with a health problem lasting more than 12 months were only over-represented in one growth sector. By 2013, they

were over-represented in 5 of the 11. Linked to this, the proportion of the workforce with a health problem lasting more than 12 months had increased in 7 of the growth sectors – suggesting significant progress is being made. It will be important to build on this further.

4. One issue that may inhibit this is the decline in the numbers of disabled people studying relevant subjects at colleges and universities. This will limit the ability of individuals to gain employment in the sector.

## 5. ETHNIC PROFILE OF GROWTH SECTORS

### Introduction

This chapter will look at the data relating to:

- Ethnic minorities – i.e. all of those identifying their ethnic status as non-white.
- Those identifying their ethnicity as ‘white Polish’. This group is being used as a proxy for recent migrants to Scotland from the EU accession countries.

It will then consider the issues faced by these groups – drawing on both the research literature and interviews with key consultees.

### Ethnic Minorities

At time of 2011 Census

- 4% of Scottish population defined their ethnicity in such a way as to fall into the ‘non-white’ classification.
- The figure was around 4% for the SE area and around 1% for the HIE area.
- The largest minority ethnic group was ‘Asian’ – accounting for 2.7% of Scottish population.

### Employment

In 2013:

- Minority ethnic groups accounted for only 2% of employment across all industries. The figure for the SE area was 2.1%, and for the HIE area 0.8% reflecting the much smaller incidence of minority ethnic groups in the working age population of the HIE area.
- Across the growth sectors the proportion of ethnic minority employees ranged from 0.4% in food and drink and 0.7% in construction up to 4% or more in the universities and in sustainable tourism. Because of sample sizes there are insufficient reliable statistics by sector for the HIE area to draw comparisons.

Since 2009:

- There has been no change in the proportion of ethnic minorities employed across all sectors across Scotland, although this is consistent with a very slight decline in both the SE and HIE areas.
- Within the growth sectors, there has been a significant increase in the employment of ethnic minorities in energy, financial and business services, life sciences and chemical sciences – but significant declines in food and drink and ICT and digital technologies.

**Figure 33: Ethnic Minorities as % of Total Employees in Growth Sectors, Scotland, 2009-2013**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>GES growth sectors</b>									
• Creative industries	2.3	1.4	↓	2.2	1.5	↓	3.3	-	
• Energy	1.0	2.1	↑	1.1	2.6	↑	0.0	0.0	
• Financial and business services	1.9	2.7	↑	2.0	2.9	↑	1.0	0.0	↓
• Food and drink	2.0	0.4	↓	1.9	0.6	↓	2.1	0.0	↓
• Life sciences	2.5	3.3	↑	2.8	2.5	↓	-	-	
• Sustainable tourism	5.1	5.5	↑	5.6	5.9	↑	2.3	2.9	↑
• Universities	5.0	4.0	↓	5.2	4.1	↓	-	-	
<b>Other growth sectors</b>									
• Chemical sciences	1.4	2.3	↑	1.5	2.6	↑	-	-	
• Construction	0.7	0.7		0.7	0.8	↑	0.6	0.0	↓
• Engineering	1.1	1.8	↑	1.2	1.9	↑	0.0	0.0	
• ICT and digital technologies	5.1	3.5	↓	5.3	3.8	↓	-	-	
<b>All industries</b>	2.0	2.0		2.2	2.1	↓	0.9	0.8	↓

Source: Annual Population Survey

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of ethnic minorities between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of ethnic minorities between 2009 and 2013.



In 2013, 29% of ethnic minority employees were working part-time. This was a small decline on the 2009 rate. Unfortunately as there are very small numbers of ethnic minorities employed in the growth sectors surveyed in the APS, it is generally not possible to calculate the proportion that are working part-time. The only exceptions to this are:

- Financial and business services, where 27% of ethnic minority employees are working part-time.
- Tourism, where 35% of ethnic minority employees are working part-time. This has declined since 2009 when the rate was 47%.

**Figure 34: Ethnic Minority Part-time Employees as % of Ethnic Minority Employees in Growth Sectors, 2009 and 2013**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>GES growth sectors</b>									
• Creative industries	-	-	-	-	-	-	-	-	-
• Energy	-	-	-	-	-	-	-	-	-
• Financial and business services	-	27.3	-	-	27.3	-	-	-	-
• Food and drink	-	-	-	-	-	-	-	-	-
• Life sciences	-	-	-	-	-	-	-	-	-
• Sustainable tourism	47.4	34.5	↓	45.3	32.0	↓	-	-	-
• Universities	-	-	-	-	-	-	-	-	-
<b>Other growth sectors</b>									
• Chemical sciences	-	-	-	-	-	-	-	-	-
• Construction	-	-	-	-	-	-	-	-	-
• Engineering	-	-	-	-	-	-	-	-	-
• ICT and digital technologies	-	-	-	-	-	-	-	-	-
<b>All industries</b>	29.6	28.7	↓	28.9	27.7	↓	42.9	-	-

Source: Annual Population Survey

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of ethnic minorities between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of ethnic minorities between 2009 and 2013.

Ethnic minority employees accounted for 2% of all part-time employees in the Scottish economy in 2013. They account for a higher proportion of part-time employees in the Scottish Enterprise area than in the Highlands and Islands area (2.2% compared to 1.4%) – although this is likely to reflect the demographic profile of the 2 areas. In terms of growth sectors:

- Ethnic minorities account for a particularly high proportion of part-time employees in energy (9%), financial and business services (4%) and tourism (4%).
- There is a mixed picture in terms of change over time, with ethnic minorities accounting for a higher proportion of part-time employees in some sectors compared to 2009 (energy, financial and business services and food and drink) and a lower proportion in others (creative industries, tourism, universities and construction). However, as the numbers are small here, care needs to be taken in not placing too much emphasis on these changes.

**Figure 35: Ethnic Minority Part-time Employees as % of Part-time Employees in Growth Sectors, 2009 and 2013**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change	2009	2013	Change	2009	2013	Change
<b>GES growth sectors</b>									
• Creative industries	3.4	1.2	↓	2.6	1.4	↓	-	-	-
• Energy	2.1	9.3	↑	2.5	11.8	↑	-	-	-
• Financial and business services	0.7	3.8	↑	0.8	4.1	↑	0.0	-	-
• Food and drink	1.6	1.8	↑	2.0	2.4	↑	-	-	-
• Life sciences	-	-	-	-	-	-	-	-	-
• Sustainable tourism	5.2	4.1	↓	5.4	4.0	↓	4.0	5.0	↑
• Universities	4.0	2.4	↓	4.1	2.6	↓	-	-	-
<b>Other growth sectors</b>									
• Chemical sciences	-	-	-	-	-	-	-	-	-
• Construction	1.5	0.0	↓	1.8	0.0	↓	-	-	-
• Engineering	0.0	0.0	-	0.0	0.0	-	-	-	-
• ICT and digital technologies	-	-	-	-	-	-	-	-	-
<b>All industries</b>	2.2	2.1	↓	2.3	2.2	↓	1.3	1.4	↑

Source: Annual Population Survey

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of ethnic minorities between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of ethnic minorities between 2009 and 2013.

### ***Self-Employment***

In 2013, as with employment:

- Only 2% of the self-employed across all industries were non-white.
- The figure varied from 2.4% in the SE area to 0.4% in the HIE area.
- Within the growth sectors, there are significant variations with nearly 6% non-white self-employed in energy falling to zero in construction, engineering and ICT and digital technologies.

Since 2009:

- The percentage of non-white self-employment in all sectors has fallen significantly at the Scottish and SE levels but risen marginally for the HIE area.
- Within the growth sectors, non-white self-employment has grown significantly in the energy sector, but declined significantly in sustainable tourism.

**Figure 35: Ethnic Minorities as % of Total Self-employment in Growth Sectors, Scotland, 2009-2013**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>GES growth sectors</b>									
• Creative industries	1.7	1.6	↓	2.1	1.9	↓	0.0	-	-
• Energy	0.0	5.9	↑	0.0	7.4	↑	-	-	-
• Financial and business services	0.5	1.9	↑	0.6	1.7	↑	-	2.9	-
• Food and drink	0.0	0.9	↑	0.0	1.4	↑	0.0	0.0	-
• Life sciences	-	-	-	-	-	-	-	-	-
• Sustainable tourism	6.9	4.4	↓	9.4	6.4	↓	0.0	0.0	-
• Universities	-	-	-	-	-	-	-	-	-
<b>Other growth sectors</b>									
• Chemical sciences	-	-	-	-	-	-	-	-	-
• Construction	1.6	0.0	↓	1.9	0.0	↓	0.0	0.0	-
• Engineering	0.0	0.0	-	0.0	0.0	-	-	-	-
• ICT and digital technologies	0.0	0.0	-	0.0	0.0	-	-	-	-
<b>All industries</b>	2.8	2.0	↓	3.3	2.4	↓	0.2	0.4	↑

Source: Annual Population Survey

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of ethnic minorities between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of ethnic minorities between 2009 and 2013.

### ***Modern Apprenticeships***

According to Skills Development Scotland statistics, the representation of individuals from ethnic minorities as Modern Apprentices in the growth sectors in 2013/14 was:

- 1.1% across all industries.
- For the growth sectors, the range was below 1% for energy, life sciences, chemical sciences, engineering and construction, up to 3% or more for financial and business services, and ICT and digital technologies.

Every Modern Apprenticeship start is asked as part of the enrolment/registration process about their ethnicity. However, given that this is a self-declaration, these figures may be an under-estimate.

Since 2009/10:

- The percentage of individuals from ethnic minorities across all sectors starting an apprenticeship has declined from 1.6% in 2009/10 to 1.1% in 2013/14.
- Within the growth sectors there has been a marked decline in financial and business services in MA starts but a growth for ICT and digital technologies as well as food and drink and creative industries.

**Figure 36: Ethnic Minorities as % of Total Modern Apprenticeship Starts by Growth Sector, Scotland, 2009-2013**

	2009/10	2010/11	2011/12	2012/13	2013/14	Change 2009/10 – 2013/14
<b>GES growth sectors</b>						
• Creative industries	-	0.0	0.0	0.0	2.2	↑
• Energy	0.0	0.0	0.0	0.3	0.0	-
• Financial and business services	6.2	3.8	3.1	0.9	3.3	↓
• Food and drink	0.3	1.3	2.9	0.6	1.1	↑
• Life sciences	-	3.7	-	-	-	-
• Sustainable tourism	2.1	1.7	2.5	1.7	1.3	↓
• Universities	-	-	-	-	-	-
<b>Other growth sectors</b>						
• Chemical sciences	-	-	-	-	-	-
• Construction	0.4	0.1	0.5	0.6	0.7	↑
• Engineering	0.3	0.5	0.5	0.5	0.5	↑
• ICT and digital technologies	2.4	1.9	4.7	2.4	3.3	↑
<b>All industries</b>	1.6	1.3	1.7	1.0	1.1	↓

Source: Skills Development Scotland

Notes:

- There are no MAs that specifically relate to universities.
- Appendix 2 provides details of which frameworks have been allocated to each growth sector.
- ↑: Sectors where there has been an increase in the representation of ethnic minorities between 2009/10 and 2013/14.
- ↓: Sectors where there has been a decrease in the representation of ethnic minorities between 2009/10 and 2013/14.

### **Business Leadership**

Data is not available from FAME or any other source on business leadership by ethnicity.

### **Education and Training**

#### *College Enrolments*

According to Scottish Funding Council statistics, the representation of individuals from ethnic minorities studying subjects relevant to the growth sectors in Scotland in 2012/13 was:

- Less than 2% for energy, food and drink, and construction courses.
- 9% or more for chemical sciences and financial and business services subjects.

- The sectoral breakdown between the HIE and SE areas is problematic because of the lower sample sizes in the HIE area.
- 4% across growth sector relevant subjects as a whole, with very little difference between students domiciled in the SE versus HIE areas.

These figures compare with an estimate of 4% ethnic minority employment across all subjects.

Since 2010/11:

- The percentage of ethnic minority students in subjects relevant to all industries has dipped marginally in Scotland and the SE area, but risen significantly in the HIE area.
- Few significant changes by growth sector are evident from the statistical record although there has been good growth for life science and chemical science subjects in the SE area.

**Figure 37: Ethnic Minorities as % of Total Enrolments in Further Education by Growth Sector, Scotland, 2010/11 to 2012/13**

	Scotland				Scottish Enterprise				Highlands and Islands Enterprise			
	2010/11	2011/12	2012/13	Change 2010/11 – 2012/13	2010/11	2011/12	2012/13	Change 2010/11 – 2012/13	2010/11	2011/12	2012/13	Change 2010/11 – 2012/13
<b>GES growth sectors</b>												
• Creative industries	2.0	2.6	2.7	↑	2.1	2.8	2.9	↑	1.6	1.5	1.5	↓
• Energy	1.0	1.7	1.8	↑	1.1	1.8	2.1	↑	0.0	0.0	0.0	-
• Financial and business services	9.6	9.7	9.4	↓	9.8	9.9	9.5	↓	0.0	0.0	0.0	-
• Food and drink	2.2	1.9	1.7	↓	2.4	2.1	1.8	↓	1.6	1.2	1.5	↓
• Life sciences	3.5	5.7	4.5	↑	3.5	5.7	4.6	↑	0.0	0.0	8.3	↑
• Sustainable tourism	5.2	5.1	4.2	↓	5.8	5.8	4.8	↓	3.3	1.3	1.3	↓
• Universities	-	-	-	-	-	-	-	-	-	-	-	-
<b>Other growth sectors</b>												
• Chemical sciences	9.3	11.1	9.0	↓	9.5	11.2	9.2	↓	0.0	0.0	0.0	-
• Construction	1.5	1.9	1.8	↑	1.7	2.1	2.0	↑	0.6	0.6	0.5	↓
• Engineering	5.1	5.6	4.1	↓	5.3	5.9	4.3	↓	3.0	1.5	3.7	↑
• ICT and digital technologies	3.7	4.1	3.7	-	4.0	4.4	4.0	-	1.2	2.6	1.6	↑
<b>All subjects</b>	4.1	4.2	4.0	↓	4.4	4.5	4.3	↓	1.7	4.5	4.2	↑

Source: Scottish Funding Council Infact Database

Notes:

- There are no college courses that specifically relate to universities.
- ↑: Sectors where there has been an increase in the representation of ethnic minorities between 2010/11 and 2012/13.
- ↓: Sectors where there has been a decrease in the representation of ethnic minorities between 2010/11 and 2012/13.



### University Entrants

According to Scottish Funding Council statistics, the representation of individuals from ethnic minority groups studying subjects relevant to the growth sectors in Scotland in 2012/13 was:

- Less than 3% for veterinary science and European languages and literature.
- 10% or more for engineering, medicine and dentistry and other languages.

These figures compare with 6.2% representation of ethnic minorities across all subject areas.

Since 2009/10:

- There have been no marked changes by subject area relevant to the growth sectors
- The percentage of students from ethnic minorities has risen from 5.3% to 6.2%.

**Figure 38: Ethnic Minorities as % of Total University Entrants, All Scottish Domiciled Students, 2009/10 to 2012/2013**

	2009/10	2010/11	2011/12	2012/13	Change 2009/10 – 2012/13
<b>GES growth sectors</b>					
• Creative industries					
– Creative Arts and Design	3.5	3.5	3.9	3.7	↑
• Energy					
– Physical Sciences	3.7	4.3	4.7	5.3	↑
– Engineering	11.0	9.9	10.5	11.1	↑
• Financial and business services					
– Law	7.9	9.6	7.5	8.0	↑
– Business and Administrative studies	9.7	9.4	8.7	9.5	↓
• Food and drink					
– Veterinary Sciences, Agriculture and related subjects	1.5	2.3	3.0	2.5	↑
• Life sciences					
– Medicine and Dentistry	11.3	12.2	12.4	13.4	↑
– Biological Sciences	5.4	5.1	5.9	5.6	↑
– Veterinary Sciences, Agriculture and related subjects	1.5	2.3	3.0	2.5	↑
• Sustainable tourism					
– European Languages, Literature and related subjects	3.2	3.9	3.4	2.8	↓

– Languages	11.2	7.3	7.0	10.3	↓
• Universities					
<b>Other growth sectors</b>					
• Chemical sciences					
– Physical Sciences	3.7	4.3	4.7	5.3	↑
• Construction					
– Architecture, Building and Planning	6.4	6.3	6.8	6.9	↑
• Engineering					
– Engineering	11.0	9.9	10.5	11.1	↑
• ICT and digital technologies					
– Mathematical and Computer Sciences	7.8	7.7	8.4	9.0	↑
– Technologies	7.2	5.0	4.6	6.0	↓
<b>All subjects</b>	5.3	5.5	5.8	6.2	↑

Source: Scottish Funding Council

Notes:

- Includes entrants on Postgraduate, First Degree, Other Undergraduate and Further Education programmes.
- Data is only available for broad subject grouping and on a percentage basis. As such, it is not possible to calculate the proportion of HE entrants into subjects relevant to each growth sector.
- There are no HE courses that specifically relate to universities.
- ↑: Sectors where there has been an increase in the representation of ethnic minorities between 2009/10 and 2012/13.
- ↓: Sectors where there has been a decrease in the representation of ethnic minorities between 2009/10 and 2012/13.

### White Polish

A key group of recent immigrants to Scotland are individuals from the EU Accession rates, with the largest group of these coming from Poland. Reflecting this, the APS 2013 included 'white Polish' as an ethnic group.

### Employment

As Figure 39 shows:

- 1.3% of employees in the Scottish economy defined their ethnicity as 'white Polish'.
- The proportion varied across Scotland, with 1.4% of employees in the Scottish Enterprise area 'white Polish' and just 0.6% in the Highlands and Islands Enterprise areas.
- The growth sector with the highest proportion of 'white Polish' employees is food and drink, with this ethnic group accounting for 9% of employees in this sector.
- 'White Polish' employees are also over-represented in tourism (where they account for 2.6% of employees).

- ‘White Polish’ employees are under-represented in creative industries, energy, financial and business services, life sciences, universities, construction and ICT and digital technologies.

**Figure 39: White Polish as % of Total Employees in Growth Sectors, Scotland, 2013**

	Scotland	Scottish Enterprise	Highlands and Islands Enterprise
<b>GES growth sectors</b>			
• Creative industries	0.7	0.8	-
• Energy	0.8	1.0	-
• Financial and business services	0.7	0.7	-
• Food and drink	9.0	10.6	4.2
• Life sciences	0.0	0.0	-
• Sustainable tourism	2.6	2.6	2.9
• Universities	1.3	1.4	-
<b>Other growth sectors</b>			
• Chemical sciences	1.5	1.7	-
• Construction	1.1	1.2	0.8
• Engineering	1.4	1.5	0.0
• ICT and digital technologies	0.6	0.6	-
<b>All industries</b>	1.3	1.4	0.6

Source: Annual Population Survey

Notes:

- ‘-’: Cases where there are fewer than 30 cases in denominator.

As the survey sample includes less than 30 individuals indicating their ethnicity as being ‘white Polish’ in each sector (except food and drink), it is not possible to calculate robust statistics in relation to part-time working patterns for this group.

### **Self-employment**

Only 16 individuals that identified their ethnic origin as ‘white Polish’ and were self-employed were interviewed as part of the 2013 APS. As such, it is not possible to analyse the pattern of self-employment for this group across growth sectors.

### **Business Leadership**

As outlined earlier, data on business leadership by ethnicity is not available.

### **Education and Training**

No data is available on the number of Modern Apprenticeship starts, college enrolments or university entrants that are white Polish.

### **Other Research**

#### **Composition of Workforce and Leadership**

- The Scottish Government (2013)<sup>53</sup> found that people from ethnic minorities are more likely to work in distribution, hotels and restaurants compared with those with a white background.
- Skillset (2012)<sup>54</sup> found ethnic minorities accounted for 3.3% of those working in the creative media industries in Scotland, compared to 5.4% across the UK as a whole.
- Caplan *et al.* (2009)<sup>55</sup> conducted a review on race discrimination in the construction Industry in the UK. They argue that there is evidence that show the race discrimination is persistent in the construction industry, despite the fact that some progress has been made compared with the past.
- The Equality Challenge Unit (2014)<sup>56</sup> found that:
  - Ethnic minority staff are underrepresented in terms of those employed in the higher education sector on open/permanent contracts and in senior roles (managers, directors and senior officials).
  - Non-UK ethnic minorities are more likely to be found in Science, Engineering and Technology subjects (SET) compare to other subjects.
- The Campaign for Science and Engineering (which has relevance to the energy, life sciences, universities, chemical sciences, construction, engineering and ICT and digital technologies sectors) found<sup>57</sup> that in England young people from most ethnic minority groups tend to be more likely to be undertaking A-levels in Biology, Chemistry and Mathematics. The key exception to this is young people from Caribbean backgrounds. This feeds through into a high proportion of HE students in STEM subjects coming from ethnic minority backgrounds. Looking at the workforce, 32% of ethnic minority males are employed in ‘STEM occupations’ compared to 23% of white males. The equivalent figures are 8% and 5% for females.

---

<sup>53</sup> Scottish Government (2013) *Scottish Government Equality Outcomes: Ethnicity Evidence Review*. Edinburgh: Scottish Government Social Research

<sup>54</sup> Creative SkillsSet (2012) *Employment Census of the Creative Media Industries*.

<sup>55</sup> Caplan, A., Aujla, A., Prosser, S. and Jackson, J. (2009). *Race Discrimination in the Construction Industry: A Thematic Review*. Equality and Human Rights Commission. Research Report: 23.

<sup>56</sup> Equality Challenge Unit (2014) *Equality in Higher Education: Statistical Report 2014 Part 1: Staff*.

<sup>57</sup> Campaign for Science and Engineering (2014). *Improving Diversity in STEM*.

- Business in the Community<sup>58</sup> has found that just 6% of top management positions and 8% of management positions in the UK are held by ethnic minorities. This compares to 10% of the workforce as a whole. They found there had been no progress on this measure between 2007 and 2012.

### **Barriers to Entry or Progression in Growth Sectors**

- In terms of the barriers to employment in construction for ethnic minorities, Caplan *et al.* (2014) found that many ethnic minorities are not aware of the wide range of vacancies in the construction industry. In addition, the construction sector shows some prevalence of word-of-mouth recruitment and tendering practices and given that ethnic minorities are not part of the formal and informal networking, they end-up being discriminated. Many individuals from ethnic minorities are low-qualified, which affect their employability negatively. Suggestions offered in relation to tackle race discrimination within the construction industry including boosting representation of ethnic minority groups in higher education as well as on job training and apprenticeships, the introduction of an industry standard for equality monitoring as well as other practical strategies, and the need to regulate labour market in a way that recruitment practices to be fairer for ethnic minorities.
- In relation to construction, the main barriers for ethnic minorities are identified<sup>59</sup> as being the low status of the industry amongst ethnic minorities with, in particular, hard and inflexible working conditions and a perceived 'laddish' culture being seen as unattractive, a lack of careers advice to young people from ethnic minorities on careers in the sector and perceived racism amongst the sector. In addition, many ethnic minorities working in the sector perceive there to be a 'glass ceiling' to promotion and that firms lack good race relations policies and practices.
- The Commission for Developing Scotland's Young Workforce<sup>60</sup> found that young people from ethnic minorities are less likely to participate in some vocational pathways and were more likely to experience prejudice and stereotyping than young people from a white background. The Commission points out that the reasons for pursuing a narrower range of vocational pathways are complex, reflecting cultural attitudes of young people and their parents, teachers and employers and can therefore only be tackled through communication and direct engagement with young people and those who influence them (for example, through the promotion of role models). The Commission highlighted the particularly low rates of participation by ethnic minorities in Modern Apprenticeship, which can be a key route into the growth sectors. The Commission made two recommendations in relation to improving outcomes for young people from ethnic minorities namely:
  - *"A targeted campaign to promote the full range of Modern Apprenticeships to young people and parents from the BME community should be developed and launched to present the benefits of work based learning as a respected career option and alternative to university.*
  - *SDS should set a realistic but stretching improvement target to increase the number of young people from BME groups starting Modern Apprenticeships. Progress against this should be reported on annually.*

<sup>58</sup> Business in the Community (2014). *Race at the Top: A Review of BAME Leadership in the UK.*

<sup>59</sup> Caplan, A., Aujla, A., Prosser, S. and Jackson, J. (2009). *Race Discrimination in the Construction Industry: A Thematic Review.* Equality and Human Rights Commission. Research Report: 23

<sup>60</sup> Commission for Developing Scotland's Young Workforce (2014). *Education Working for All!* Edinburgh: Scottish Government.

### **Pay, Earnings and In-work Poverty**

- As outlined in the earlier chapters, pay gaps are primarily measured for gender but in 2009, the Equalities and Human Rights Commission commissioned research<sup>61</sup> into pay gaps for other protected characteristics – including ethnicity. The evidence was mixed – with variations in the existence of a pay gap and the scale of it depending on both the ethnicity in question and gender. In addition, much of the data appeared to be quite dated. The most recent available data (for 2004-07) found that compared to white British males, males from an Indian background earn 4% more on average, while Pakistani males earn 23% less, Bangladeshi males earn 21% less, Black Caribbean males earn 5% less and Black African males earn 18% less. Chinese males earn the same on average as white British males. Unfortunately, the analysis does not examine how this varies across sectors and there appears to have no further research on this topic since 2009.
- Research by the Resolution Foundation<sup>62</sup> found that 48% of workplaces that used zero hours contracts employed non-UK nationals, compared to just 25% of workplaces that did not. As outlined earlier, the analysis of the use of zero hours contracts across different sectors undertaken by the Resolution Foundation, would suggest that tourism and creative industries are the growth sectors most likely to be using zero hours contracts.
- Research by Mackinnon et al.<sup>63</sup> into how globalisation has affected people's employment experiences found perceptions that Polish workers were willing to work for lower wages than others – but also that there was some evidence that Polish workers were being exploited (with, for example, Citizens Advice Bureau being asked for advice on non-payment of wages).
- Forced labour is estimated to affect between 3,500 and 5,000 individuals within the UK – with it most common in relation to sectors characterised by low-skilled, low-paid manual work including domestic work, food processing, agriculture, hospitality, cleaning, care, and construction<sup>64</sup>. Whilst forced labour can affect anyone, there is an overlap between forced labour and migration – meaning many of those affected are from an ethnic minority background, including recent migrants from the EU Accession Countries. Research into forced labour in the food industry in the UK<sup>65</sup>, found 14 different types of practice, including the use of upfront fees to secure work, threats and bullying, the use of dismissal as a disciplinary mechanism, excessive use of productivity targets and monitoring, overwork and underwork (with a particular focus on providing just enough hours to enable workers to pay debts but leaving no additional money to enable them to save).

### **Recognition of Ethnicity within Assessments of Sector Needs**

- In a review of industry statements on skills needs and shortages, Sosenko<sup>66</sup> found that only one (Skillset – covering creative industries) made an explicit recommendation in terms of the sector needing to increase the number of ethnic minority workers in order to tackle

---

<sup>61</sup> Metcalf, H. (2009). *Pay Gaps Across the Equality Strands: A Review*.

<sup>62</sup> Pennycook, M., Cory, G. and Alakeson, V. (2013). *A Matter of Time. The Rise of Zero-Hours Contracts*. Resolution Foundation.

<sup>63</sup> MacKinnon, D., Cumbers, A., Featherstone, D., Ince, A. and Strauss, K. (2011). *Globalisation, Labour Markets and Communities in Contemporary Britain*. Joseph Rowntree Foundation.

<sup>64</sup> Skrivankova, K. (2014). *Forced Labour in the United Kingdom*. Joseph Rowntree Foundation.

<sup>65</sup> Scott, S., Craig, G. and Geddes, A. (2012). *Experiences of Forced Labour in the UK Food Industry*. Joseph Rowntree Foundation.

<sup>66</sup> Sosenko, F. (2013). *Analysis of Industry Statements on Skills Needs and Shortages*.

the skill shortages it faces. In addition, Skills for Health, made a recommendation in terms of improving the progression of ethnic minorities within health services.

### **Occupational Profile**

- Across the UK as a whole, Skillset (2012)<sup>67</sup> found that ethnic minority representation is lower than the industry average in strategic management, creative development, engineering and transmission, art and design, animators, camera/photography, lighting, audio/sound/music, transport, editing, manufacture and servicing occupations.
- Caplan *et al.* (2014) found that that ethnic minorities tend to be unrepresented in managerial and professional roles in the construction industry.
  - Looking within ethnic minorities, UK black staff who are employed as professors reveal a lower proportion compared with all other ethnic groups (4%). This is also the case for the non-UK black ethnic minority staff, but in a lower proportion (2.1%).

### **Views of Key Consultees**

A representative from BEMIS was interviewed as part of the research – to gather some wider views on race. They felt the general barriers to employment for ethnic minorities were:

- Support for ethnic minorities through employability provision (particularly targeted provision for ethnic minorities) is often of low quality and is taking the wrong kind of approach as they see ethnic minorities as ‘disadvantaged’; ‘needing support’. It was felt that this creates a dependency culture - instead there needs to be a shift to seeing that ethnic minorities have skills and qualifications and a need to foster accountability and responsibility in the communities.
- Ethnic minorities are a very diverse group – but there is a tendency to see that they all have the same issues and problems.
- There is a need to break down stereotypes and to see that ethnic minorities are citizens of Scotland and not ‘them’ or ‘the other’ and work from an equal opportunities perspective.
- There is an expectation that cultural barriers will be too great to break down, but this is an inaccurate view. Cultures within ethnic minority groups are amenable to change and this is already happening with parents wanting to help their children participate in the labour market more effectively. A clear example of this is the development of projects to increase the number of ethnic minority football coaches where a feature has been the take up of these opportunities by girls.
- Positive action and projects that facilitate access to particular sectors are useful approaches such as offering internships and/or work placements in some sectors
- In addition, there are some issues around access to information and understanding of the application processes that can act as barriers and lack of confidence around applying for some types of jobs. There needs to be some training around preparation for interviews/ mentoring to build confidence to apply and increase aspirations to get into these sectors.

In relation to the growth sectors, specific issues include:

---

<sup>67</sup> Creative SkillsSet (2012) *Employment Census of the Creative Media Industries*.

- Some ethnic minority communities do not see jobs in the creative industries as attractive.
- Energy is not a traditional area of employment for ethnic minorities and efforts need to be made by this industry to increase recruitment from ethnic minorities.
- Ethnic minority communities have a high level of interest in financial and business services and believe that individuals from ethnic minorities are being recruited. However, concerns remain about whether individuals are progressing to senior roles.
- For some ethnic minorities, the food and drink sector is unattractive – particularly if it involves dealing with alcohol or meat. However, it is felt that the sector could do more to attract ethnic minorities.
- Life sciences is seen as an attractive area of employment for ethnic minorities and therefore young people encouraged to enter this sector.

Whilst race and migration are separate issues, there is a high degree of overlap in terms of the equality issues faced. Migrant Voice nominated an individual migrant to provide their perspectives. The views they put forward are for migrants as a whole – rather than focusing on particular groups such as migrants from EU Accession Countries.

- In terms of recruitment, the key issues are:
  - A lack of recognition of non-UK qualifications.
  - A lack of knowledge of UK job application processes.
  - Difficulties demonstrating transferable skills.
  - Discrimination – although there is some evidence of improvements as a result of anti-discrimination policies and practices.
- As many migrants are in low skilled, low paid jobs with poor working conditions, retention levels can be low.
- Access to training is mixed – depending on the individual employer and sector.
- There is some anecdotal evidence that migrants are paid less than others – but further research is needed on this.
- Migrants generally face difficulties in relation to promotion and advancement with limited efforts by employers to promote promotion opportunities in structured way.
- In response to the barriers many migrants face in gaining mainstream employment, some migrants pursue self-employment. However, they can face barriers to starting a business including a lack of capital and limited access to external finance. Many businesses serve migrant communities (for example, cafes, black hair products, etc.) and these product markets can quickly become saturated.
- In relation to particular sectors:
  - It can be difficult for migrants to access job opportunities in the creative industries as this is a highly competitive sector to get into.
  - Within energy, migrants tend to be concentrated in lower level occupations such as contact centres.
  - Food and drink and tourism are key sectors for migrants – but there are concerns that as these are primarily low paid and low skilled jobs there are limited opportunities to progress.
  - Construction has been dominated by migrants from Eastern Europe – but there can be divisions within these communities with migrants unwilling to recruit from other migrant groups. ICT and digital technologies is seen as an attractive sector to South Asian migrants – but other groups have less positive views.



- In general, attitudes to migration are thought to be generally positive in Scotland compared to other parts of the UK. However, they felt attitudes to migration may be changing due to the politicisation of migration during the UK General Election campaign and the current situation in the Mediterranean.

### Key Messages

1. Ethnic minorities account for 2% of the employees in the Scottish economy and 2% of the self-employed.
2. In terms of the growth sectors:
  - Ethnic minorities are over-represented in the workforce of the energy, financial and business services, life sciences, tourism, universities, chemical sciences and ICT and digital technologies sectors. This is notable as, with the exception of tourism, these tend to be among the growth sectors with the highest GVA per employee.
  - In general, ethnic minorities are also over-represented in the MA frameworks and college and university courses that lead to careers in these sectors. In particular, ethnic minorities account for 3% of those undertaking MA frameworks and 9% of colleges enrolments in relation to financial and business services.
3. Whilst there is limited data on the representation of recent migrants from the EU Accession Countries within the growth sectors, those that identified their ethnic identity as 'white Polish' are over-represented in the food and drink and tourism sectors, accounting for 9.0% and 2.6% of the workforce of these sectors, compared to just 1.3% of all Scottish employees.
4. Given that the representation of ethnic minorities has increased in 6 of the growth sectors, and they have good representation in some of the highest value-added sectors, it will be important to build on these positive trends. In particular, it will be important to increase the representation of ethnic minorities in those sectors where they currently for a very small proportion of employment. Given that all of the growth sectors are of critical importance to the Scottish economy, all must be representative of the population as a whole.

## 6. OTHER PROTECTED CHARACTERISTICS IN GROWTH SECTORS

### Introduction

Whilst there is a range of data available on a sectoral basis for the protected characteristics of sex (gender), age, disability and race, data are more limited for:

- Gender reassignment
- Marriage and civil partnership
- Maternity and pregnancy
- Religion
- Sexual orientation.

This chapter summarises the key data and research for these protected characteristics.

### Gender Reassignment

None of the datasets that have been examined in relation to this study currently include a question on gender reassignment. To address this gap, a representative from the Scottish Transgender Alliance was interviewed as part of this study.

- Individuals transitioning facing a number of problems within the workplace, including open hostility and bullying to more nuanced issues such as employers being unwilling to allow them to undertake frontline roles (for fear of putting off clients), referring to them by their old name or 'outing' them as transgender to new colleagues. These can lead to individuals feeling isolated.
- Individuals can face a trade off between being able to take credit for projects or activities they led prior to transitioning (which would mean that others are able to identify them and therefore know they have undergone gender reassignment) or having to 'start again' and not take credit for their achievements. Individuals working in smaller sectors face particular problems in making a fresh start without people being able to identify them.
- There is limited evidence in regards to the levels of discrimination faced by transgender people in employment. While it appears less common that individuals are fired on transitioning, many fear that their promotion opportunities will be hampered. In particular, some employers are thought to consider gender reassignment as demonstrating a lack of mental robustness making an individual less suitable for promotional opportunities.
- On a sectoral basis, there are examples of individuals having good and bad experiences of transitioning in all sectors.
  - There is some anecdotal evidence that trans women, prior to transitioning to female, often pursue careers in traditional 'male' occupations and sectors such as energy, construction, engineering, police or armed forces to 'prove themselves'.
  - Many financial and business services companies are multi-nationals and have more capacity to develop their policies and practices. The larger the organisation, the more likely it is that there will be out transgender individuals within the workforce. As such, they tend to be more progressive and have policies in place for gender reassignment. In addition, the competition within this sector for recent graduates is high meaning most wish to have LGBT friendly policies in place.
  - The university sector may have a higher than average population of transgender individuals as academia is sometimes perceived to be more transgender-friendly partly due to student campaigning for LGBT friendly policies to be in place.

- The internet is seen as providing a good opportunity to move beyond physical appearances and therefore ICT and digital technologies is a potentially attractive sector to transgender individuals. However, perceptions of sexism within the gaming industry are considered problematic for transgender individuals.
- The creative industries are thought to be more accepting of difference and, therefore, are also potentially attractive to transgender individuals.
- More generally, the extent to which an employer is accepting of transgender individuals is likely to reflect whether it has a large workforce and has devoted resources to equalities policy development.
- There is some evidence that levels of self-employment are higher amongst transgender individuals, which may reflect a lack of mainstream employment opportunities in some sectors or geographies. However, individuals can struggle to win contracts in some sectors due to their transgender status.
- High profile examples of individuals undergoing gender reassignment has helped change perceptions over the last 5 years – although it is difficult to gauge the scale of these attitude changes.

In addition, research undertaken by the Equality Challenge Unit (2014)<sup>68</sup> into Higher Education shows found that there are only a few institutions where individuals that had undergone gender reassignment were overrepresented. However there are concerns expressed regarding the relevant question asked as well as the method chosen for data collection.

### **Marriage and Civil Partnership**

Figure 40 shows the proportion of employees that are married. Ideally, it would also be useful to present data on the proportions that are in a civil partnership – but the APS in 2013 interviewed only 37 individuals in Scotland that were in a civil partnership or had formally been in a civil partnership but where the partnership had been legally dissolved or where the individual was a surviving civil partner (with their partner having died) – meaning insufficient data exists in order to undertake a robust analysis.

- Overall, life sciences and ICT and digital technologies are the sectors with the highest proportion of married employees, whilst tourism has the lowest rate (reflecting the predominance of young people within this sector).
- In general, the pattern of marriage is similar across Scotland, Scottish Enterprise and Highlands and Islands Enterprise.
- The proportion of the workforce which is married has declined in 6 of the growth sectors between 2009 and 2013, in some cases by a large margin (for example, from 60% to 54% in food and drink).

---

<sup>68</sup> Equality Challenge Unit (2014) *Equality in Higher Education: Statistical Report 2014 Part 1: Staff*.

**Figure 40: Married as % of Total Employees in Growth Sectors, Scotland, 2009-2013**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013		2009	2013		2009	2013	
<b>GES growth sectors</b>									
• Creative industries	59.0	58.3	↓	57.6	59.5	↑	73.3	-	-
• Energy	67.8	65.2	↓	66.6	64.7	↓	75.9	67.3	↓
• Financial and business services	61.7	57.0	↓	61.4	57.1	↓	65.0	56.1	↓
• Food and drink	60.1	53.5	↓	60.4	53.5	↓	59.3	53.4	↓
• Life sciences	60.3	70.7	↑	58.9	67.1	↑	-	-	-
• Sustainable tourism	35.4	35.5	↑	33.2	34.3	↑	46.9	42.8	↓
• Universities	63.7	64.4	↑	63.8	64.4	↑	-	-	-
<b>Other growth sectors</b>									
• Chemical sciences	67.6	65.4	↓	66.7	72.6	↑	-	-	-
• Construction	56.7	58.6	↑	56.5	58.4	↑	58.1	60.2	↑
• Engineering	68.6	62.9	↓	69.4	62.4	↓	61.1	68.8	↑
• ICT and digital technologies	60.1	67.1	↑	60.2	67.9	↑	-	-	-
<b>All industries</b>	60.0	57.6	↓	59.4	57.1	↓	64.2	61.2	↓

Source: Annual Population Survey

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of married individuals between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of married individuals between 2009 and 2013.

None of the other datasets that have been examined in relation to this study currently include a question on marriage and civil partnership.

### Maternity and Pregnancy

None of the datasets that have been examined in relation to this study currently include a question on maternity and pregnancy. An interview was undertaken with the Family Friendly Network Scotland. The key points they raised in relation to maternity and pregnancy were that:

- The vast majority of employers abide by legislation in relation to maternity and paternity leave. However, for fathers, the extent to which they feel able to take their paternity entitlement depends on the culture of their workplace.
- Whilst rights are respected at the initial maternity/pregnancy stage, gaining employer's agreement to a flexible working pattern that meets family needs can be more difficult. A key issue here is that employers lack knowledge of how best to manage flexible working. This is a broader issue than just parenting with individuals with all sorts of outside commitments (including caring responsibilities for adults) and interests having an interest in flexible working.

### Religion

Overall, 41% of employees in 2013 said they had no religion.

- The sectors with the largest proportion of individuals stating that they have no religion are life sciences and the creative industries.
- The sectors with the lowest proportion stating they have no religion are food and drink, engineering, construction and universities.
- A slightly smaller proportion of people in the Highlands and Islands stated they had no religion than in the Scottish Enterprise area.
- Whilst the proportion stating that they have no religion has increased for every growth sector for which we have data between 2009 and 2013, there has been a slight change in the APS question on this topic which is likely to account for this shift.

**Figure 41: Individuals with No Religion as % of Total Employees in Growth Sectors by Religion, Scotland, 2009 and 2013**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>GES growth sectors</b>									
• Creative industries	24.8	52.1	↑	24.9	51.7	↑	23.3	-	-
• Energy	27.7	48.0	↑	28.0	48.6	↑	25.3	45.1	↑
• Financial and business services	23.5	43.5	↑	22.9	44.1	↑	30.1	34.8	↑
• Food and drink	21.3	34.9	↑	19.6	32.6	↑	26.4	41.5	↑
• Life sciences	30.6	57.6	↑	29.9	57.0	↑	-	-	-
• Sustainable tourism	27.7	47.7	↑	28.4	47.9	↑	24.0	46.7	↑
• Universities	33.5	42.2	↑	33.6	43.2	↑	-	-	-
<b>Other growth sectors</b>									
• Chemical sciences	27.6	45.4	↑	28.1	50.4	↑	-	-	-
• Construction	24.4	42.3	↑	24.1	42.0	↑	26.3	43.8	↑
• Engineering	22.7	40.6	↑	23.0	40.3	↑	20.0	43.8	↑
• ICT and digital technologies	35.5	48.2	↑	36.1	46.5	↑	-	-	-
<b>All industries</b>	23.2	40.8	↑	23.4	41.1	↑	21.5	38.9	↑

Source: Annual Population Survey

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of individuals with no religion between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of individuals with no religion between 2009 and 2013.

Turning to those that are religious, Figure 42 shows the proportion in each sector that Protestant, Roman Catholic or are from another religion in 2013. No data is available on the breakdown of Christians into Protestant, Roman Catholic and other Christian religion for 2009, so it is not possible to show change over time.

- Protestants account for the largest group of those with a stated religion. Food and drink and engineering are the sectors with the largest proportion of Protestants. In contrast, life sciences, ICT and digital technologies and creative industries are the sectors with the lowest proportion.
- Roman Catholics are the second largest group with a stated religion. The growth sectors with the highest proportion of Roman Catholics within their employees are tourism, food and drink and construction.
- A further 10% of employees are from another Christian denomination and a further 3% have another religion.

**Figure 42: Representation of Different Religions as % of Total Employees in Growth Sectors by Religion, Scotland, 2013**

	Protestant			Catholic			Other Christian			Other Religion		
	Scotland	Scottish Enterprise	Highlands and Islands Enterprise	Scotland	Scottish Enterprise	Highlands and Islands Enterprise	Scotland	Scottish Enterprise	Highlands and Islands Enterprise	Scotland	Scottish Enterprise	Highlands and Islands Enterprise
<b>GES growth sectors</b>												
• Creative industries	22.6	22.4	-	11.5	12.4	-	10.4	10.0	-	3.5	3.5	-
• Energy	28.1	25.6	39.6	10.4	11.7	4.5	10.4	10.7	9.0	3.1	3.6	0.9
• Financial and business services	28.3	28.1	31.8	14.8	14.8	15.2	10.9	10.6	16.7	2.5	2.5	1.5
• Food and drink	34.9	35.9	32.2	17.2	18.5	13.6	11.7	11.8	11.9	1.1	1.5	0.0
• Life sciences	20.7	20.3	-	16.3	17.8	-	4.3	3.8	-	1.1	1.3	-
• Sustainable tourism	22.5	21.6	27.7	17.5	18.2	13.1	7.9	8.0	7.3	4.3	4.3	5.1
• Universities	25.1	24.7	-	13.9	14.4	-	14.5	14.0	-	4.3	3.8	-
<b>Other growth sectors</b>												
• Chemical sciences	30.0	28.2	-	12.3	12.8	-	11.5	12.0	-	0.8	0.9	-
• Construction	31.6	29.9	41.4	16.5	17.9	7.8	7.8	8.4	3.9	1.9	1.6	3.1
• Engineering	31.6	30.7	40.6	16.3	17.6	3.1	10.0	9.7	12.5	1.5	0.0	1.6
• ICT and digital technologies	23.2	22.7	-	14.2	14.9	-	10.1	11.0	-	4.2	4.5	-
<b>All industries</b>	31.2	30.5	36.8	15.3	16.4	8.2	10.1	9.6	13.1	2.5	2.3	3.5

Source: Annual Population Survey

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.

None of the other datasets that have been examined in relation to this study currently include a question on religion.

### Sexual Orientation

Whilst the APS includes a question on sexual orientation, data is not released on this, as suggested in the GSS guidelines. None of the other datasets that have been examined in relation to this study currently include a question on sexual orientation. However, a number of studies have examined the issue of sexual orientation on a sectoral basis. The key findings from these studies includes the following.

- In a recent study conducted jointly by a research team based in Manchester and Plymouth University by Hoel et al (2014)<sup>69</sup> a survey of 1,200 interviews accompanied by 50 in depth interviews in 6 organisations used as studies have revealed very interesting findings regarding the lesbian, gay and bisexual (LGB) communities workplace experiences. Particularly two of these case studies have been carried out within organisations that belong to the growth sectors. The one concerns NHS large regional body that employs more than 13,000 staff in a mixture of skills and specialities that offer acute as well as conventional medical services. From this case study it has been revealed LGB's do not feel comfortable to disclose their sexuality to patients as they are afraid of potential homophobic comments expressed from patients and relatives. Moreover, LGB's had the feeling that their colleagues were not respectful to them, attributing this to their different sexual orientation. The second case study conducted in one of the largest financial organisations, which employs more than 3,000 staff in the UK and over 100,000 worldwide. This organisation has been severely hit by the financial crisis. However, they do not hesitate to present their company as "gay friendly" and an "equal opportunities" employer. After a more in depth investigation, such comments were more for marketing purposes to external clients, as it seemed that helped company in establishing a substantial investment portfolio that is particularly connected with LGB's issues. Looking the organisation inwards, LGB's mentioned that they had negative experiences as they were subjected to sexist comments and sometimes bullying. However, they were not keen to report this as they were afraid that this would negatively influence their career progression. Some other said that it would be of no use and nothing would have happened.
- Research published by Stonewall Scotland in 2012<sup>70</sup> found that in the previous 5 years, 6% of working age Scots had observed homophobic or transphobic verbal bullying at work and 2% had observed physical bullying. The same survey asked what areas people thought lesbian, gay, bisexual and transgender people were most likely to conceal their sexual orientation or gender identify. Whilst the categories did not relate to sectors, some did relate to the workplace with 58% identifying manual work and 39% business. Only 9% said they felt entertainment was an area where they thought lesbian, gay, bisexual and transgender people would be most likely to conceal their sexual orientation or gender identity and 3% felt the arts were a key area. Given that these areas both sit within the creative industries, this is a positive finding for this sector.
- Research by Metcalf and Rolfe<sup>71</sup> into the barriers to employers developing lesbian, gay, bisexual and transgender-friendly workplaces found that main barriers to action were nervousness by employers about the issue, inertia, believing that no action was required, a lack of knowledge about how to create a more LGBT-friendly workplace, concerns about objections from employees and the prioritisation of

<sup>69</sup> Hoel, H. Lewis, D. And Einarsdottir, A.(2014) *The ups and downs of LGBs' workplace experiences. Discrimination, bullying and harassment of lesbian, gay and bisexual employees in Britain*. University of Manchester. B35887

<sup>70</sup> Stonewall Scotland (2012). *Living Together. Scottish Attitudes to Lesbian, Gay, Bisexual and Transgender People in 2012*.

<sup>71</sup> Metcalf, H. and Rolfe, H. (2011). *Barriers to Employers Developing Lesbian, Gay, Bisexual and Transgender-Friendly Workplaces*.



tackling other equality issues. The research also found that male-dominated environments were more problematic in terms of employee objections to taking action to become more LGBT-friendly - an interesting finding when considered alongside the gender split of the growth sectors discussed in Chapters 2 and 7. In addition, they found that it was more difficult to tackle barriers on peripheral sites – again suggesting that it may be more difficult to establish LGBT friendly working environments for some sectors than others.

- As part of their efforts to support a more supportive work environment for lesbian, gay and bisexual people, Stonewall publishes a list of 'top 100 employers'. In 2013, the top 5 employers for Scotland<sup>72</sup> included 3 firms in the financial and business services sector (Barclays, Lloyds Banking Group and Clydesdale Bank).
- The Institute for Engineering and Technology undertook a survey of engineers<sup>73</sup> in June 2014 found that 34% were not open about their sexual orientation at work, 8% felt that their colleagues discriminated against them as a result of their sexual orientation and 18% felt that their sexual orientation creates barriers to their career progression. Engineers play key roles in not just engineering but also energy, chemical sciences and construction – so these findings are likely to affect all of these growth sectors.

### Key Messages

1. There is no data available on the representation of the protected characteristics of gender reassignment, maternity and pregnancy and sexual orientation in the workforce or leadership of the growth sectors.
2. In terms of marriage and civil partnership, there appears to be no clear pattern in the proportion of the workforce that is married across the different growth sectors – although this varies from just 36% in tourism (reflecting the high proportion of young people employed in this sector) to 71% in life sciences. However, overall the proportion that are married is declining over time.
3. There are also no clear messages that can be drawn from the representation of individuals from different religions in the growth sectors.
4. The key implication here is that, in light of the Equality Act 2010, those collecting data on the workforce should seek to ensure that data is captured on all protected characteristics.

<sup>72</sup> Stonewall Scotland (2013). *Stonewall Top 100 Employers 2013. The Workplace Equality Index.*

<sup>73</sup> Engineering and Technology Magazine (2014). LGBT Survey: E&T Hears from the Engineering Industry. Volume 9, Issue 7.

## 7. OVERVIEW BY GROWTH SECTOR

### Introduction

This chapter sets out the key statistics and research findings by growth sector. For each growth sector, their performance against a number of key indicators is presented, followed by a summary of the research findings. The skills issues facing each sector are also discussed. With the exception of the discussion of skills shortages, the material presented in this chapter is a *repeat* of that presented in Chapters 2 through 7 but organised by growth sector rather than protected characteristic. This is intended to provide an overview of each sector's performance for those working in sectoral teams within Scottish Enterprise, Highlands and Islands Enterprise, Skills Development Scotland and other organisations. If a research finding relates to more than one growth sector, it is repeated under each sector for which it is relevant. This is most common for research findings which relate to Science, Technology, Engineering and Mathematics (STEM) subjects – which are relevant for a number of growth sectors.

## Creative Industries Key Indicators

Figure 43: Equalities in Creative Industries

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>Gender</b>									
• Females as % of all employees	44.2	50.3	↑	41.4	49.4	↑	73.3	-	-
• Females as % of all self-employed	41.1	48.6	↑	38.6	47.8	↑	53.3	-	-
• Females as % of all directors (2014)	-	33.1	-	-	32.6	-	-	39.3	-
<b>Age</b>									
• Young people (16-25) as % of all employees	10.0	10.8	↑	10.9	10.0	↓	0.0	-	-
• Young people (16-25) as % of all self-employed	1.7	3.2	↓	2.1	3.1	↑	0.0	-	-
• Young people (under 30) as % of all directors (2014)	-	3.7	-	-	3.8	-	-	3.0	-
• Older people (55 and over) as % of all employees	16.8	16.6	↓	16.8	16.6	↓	16.7	-	-
• Older people (55 and over) as % of all self-employed	37.1	38.4	↑	31.7	35.8	↑	63.3	-	-
• Older people (60 and over) as % of all directors (2014)	-	24.6	-	-	24.7	-	-	23.7	-
<b>Disability</b>									
• Individuals with a health problem lasting more than 12 months as % of all employees	18.9	26.0	↑	19.0	27.3	↑	-	-	-
• Individuals with a health problem lasting more than 12 months as % of all self-employed	27.3	31.9	↑	25.4	34.1	↑	-	-	-
<b>Race</b>									
• Ethnic minorities as % of all employees	2.3	1.4	↓	2.2	1.5	↓	3.3	-	-
• Ethnic minorities as % of all self-employed	1.7	1.6	↓	2.1	1.9	↓	0.0	-	-
• White Polish as % of all employees	-	0.7	-	-	0.8	-	-	-	-

Source: Annual Population Survey and FAME

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of protected characteristic between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of protected characteristic between 2009 and 2013.

## Key Research Findings

### Gender

- Skillset (2012)<sup>74</sup> conducted a research where the employment composition of the creative media industries (such as film, TV and animation) was analysed. They found that the women accounted for 36% of the total workforce in 2012, compared to 27% in 2009. This increase is seen as having offset a decline in female representation between 2006 and 2009.
- This research also found that there were wide variations in the representation of women across different specialisms and occupations. Women were underrepresented in strategic management, engineering and transmission, content development, art and design, animators, camera/photography, lighting, audio/sound/music, transport, studio operations, technical development, editing, manufacture and servicing occupations.

### Age

- Research by IPPR and the Resolution Foundation<sup>75</sup> found that the industries with highest proportion of employees earning less than the Living Age are hotels and restaurants, wholesale and retail, administration and the arts. Whilst these are defined more broadly than the growth sectors, this would suggest that tourism and the creative industries are the sectors with the largest proportion of staff earning less than the Living Wage. Women and young people (16-24) are more likely to be earning below the living wage than other groups.
- Art Council England argues that the dominance of small and medium sized enterprises in the sector is one of the key reasons young people are struggling to access employment in the sector. In particular, the focus on unpaid internships deters young people from entering the sector and leads to a less diverse sector (in terms of disability, social class and ethnicity) than would otherwise be the case. As a result, the pool of prospective young people entering the arts and cultural sectors will become even more homogenous which in turn will affect the art that is produced, distributed and attended by the wider population. Whilst this relates to England, the Scottish position is likely to be similar.

### Disability

- Skillset (2012)<sup>76</sup> conducted a research where the employment composition of the creative media industries (such as film, TV and animation) was analysed. They found that disabled workers accounted for just 1% of the workforce in 2012 – a similar rate to previous censuses undertaken in 2006 and 2009.

### Ethnicity

- Skillset (2012)<sup>77</sup> found that individuals from ethnic minorities accounted for 3.3% of those working in the creative media industries in Scotland, compared to 5.4% across the UK as a whole. Across the UK as a whole, Skillset found that ethnic minority representation is

---

<sup>74</sup> Creative SkillsSet (2012) *Employment Census of the Creative Media Industries*.

<sup>75</sup> IPPR and Resolution Foundation (2013). *Beyond the Bottom Line: The Challenges and Opportunities of a Living Wage*.

<sup>76</sup> Creative SkillsSet (2012) *Employment Census of the Creative Media Industries*.

<sup>77</sup> Creative SkillsSet (2012) *Employment Census of the Creative Media Industries*.

lower than the industry average in strategic management, creative development, engineering and transmission, art and design, animators, camera/photography, lighting, audio/sound/music, transport, editing, manufacture and servicing occupations.

- Research by the Resolution Foundation<sup>78</sup> found that 48% of workplaces that used zero hours contracts employed non-UK nationals, compared to just 25% of workplaces that did not. As outlined earlier, the analysis of the use of zero hours contracts across different sectors undertaken by the Resolution Foundation, would suggest that tourism and creative industries are the growth sectors most likely to be using zero hours contracts.

### ***Skills Issues for Creative Industries***

Skills Development Scotland is developing Skills Investment Plans (SIPs) for each of the Scottish Government growth sectors. The SIPs set out the action needed to ensure the sector has the skills they need to achieve their growth potential. The Skills Investment Plan for the creative industries sector is currently being developed – and has not yet been published. The UK Commission for Employment and Skills (UKCES) has published a Sector Skills Insight<sup>79</sup> for the digital and creative sector. This highlights the key skills issues facing the sector as being:

- The need to innovate to keep pace with changing customer expectations is driving demand for skills.
- There will be an increasing need for higher level skills to fill managerial, professional and associate professional roles.
- The digital and creative sector has an above average proportion of hard-to-fill vacancies – with most of these due to a shortage of applicants with the skills, experience and qualifications.
- Skills shortages are most common in professional and associate professional occupations.
- There is a need to widen the recruitment pool and the routes into the industry (for example, with greater use of Modern Apprenticeships).
- There is a lack of formal training in the sector, with few employers supporting staff through nationally recognised qualifications.

---

<sup>78</sup> Pennycook, M., Cory, G. and Alakeson, V. (2013). *A Matter of Time. The Rise of Zero-Hours Contracts*. Resolution Foundation.

<sup>79</sup> UKCES (2012). *Sector Skills Insights: Digital and Creative. Evidence Report 49*.

## Energy Key Indicators

Figure 44: Equalities in Energy

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>Gender</b>									
• Females as % of all employees	23.8	19.2	↓	25.0	22.3	↓	15.7	5.3	↓
• Females as % of all self-employed	12.0	8.8	↓	11.9	7.4	↓	-	-	-
• Females as % of all directors (2014)	-	29.4	-	-	29.2	-	-	31.0	-
<b>Age</b>									
• Young people (16-25) as % of all employees	7.7	6.7	↓	8.3	6.8	↓	3.6	6.2	↑
• Young people (16-25) as % of all self-employed	0.0	0.0	-	0.0	0.0	-	-	-	-
• Young people (under 30) as % of all directors (2014)	-	2.2	-	-	2.1	-	-	3.3	-
• Older people (55 and over) as % of all employees	13.3	17.9	↑	12.2	16.7	↑	20.5	23.0	↑
• Older people (55 and over) as % of all self-employed	40.0	41.2	↑	42.9	38.9	↓	-	-	-
• Older people (60 and over) as % of all directors (2014)	-	25.2	-	-	25.4	-	-	23.7	-
<b>Disability</b>									
• Individuals with a health problem lasting more than 12 months as % of all employees	21.9	15.5	↓	21.9	16.4	↓	22.0	12.5	↓
• Individuals with a health problem lasting more than 12 months as % of all self-employed	25.5	-	-	30.0	-	-	-	-	-
<b>Race</b>									
• Ethnic minorities as % of all employees	1.0	2.1	↑	1.1	2.6	↑	0.0	0.0	-
• Ethnic minorities as % of all self-employed	0.0	5.9	↑	0.0	7.4	↑	-	-	-
• White Polish as % of all employees	-	0.8	-	-	1.0	-	-	-	-

Source: Annual Population Survey and FAME

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of protected characteristic between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of protected characteristic between 2009 and 2013.

## Key Research Findings

### Gender

- Research by Oil and Gas UK<sup>80</sup> found that in 2013, just 3.6% of the offshore oil and gas workforce and 2.9% of the core workforce (those that work offshore for 100 or more days). This was a slight decline on 2012 and the lowest level since 2006 (when the first Demographics Report was published). 30% of those employed offshore were in catering roles, 10% were in maintenance positions, 4% were in medical positions and 2% were in geosciences roles.
- Research by Close the Gap<sup>81</sup> suggests that women account for just 17% of employees in the renewable energy sector. The research found that the majority of women working in the sector are in administrative roles. In addition, they estimate that just 10% of jobs in the renewable technologies (e.g. development and supply chain activities) are held by women – although they feel that great analysis is needed to understand why. Potential reasons for the lack of female representation proposed include the recruitment practices of the start-up companies within this sector (with a reliance informal networking) and lack of established skills paths into and through the sector may be disadvantaging women.
- The Commission for Developing Scotland's Young Workforce (also known as the Wood Commission)<sup>82</sup> suggested that the gender balance of newer industries such as life sciences, renewables (part of energy) and IT have a gender imbalance.

### Age

- Research by Oil and Gas UK<sup>83</sup> found that the average age of an offshore worker was 40.8 years. The majority of the growth in the workforce between 2006 and 2013 has been in younger workers (aged between 18 and 35) – suggesting concerns over the ageing of the workforce are unfounded.
- Research by Close the Gap<sup>84</sup> into the renewable energy sector found that there were concerns that the renewable energy sector would not be able to meet the demand for skills as it grew, in part due to the ageing profile of the wider energy workforce. They suggested that there was unmet demand for graduates within the sector. Whilst graduates are not all 'young', the majority are suggesting there is potential to improve representation of young people within the sector.

### Disability

- Research undertaken on behalf of the Equality and Human Rights Commission found that the proportion the profile of disabled people across sectors is very similar to that of non-disabled people. 2% of disabled people work in energy and water, the same proportion as the non-disabled.

<sup>80</sup> Oil and Gas UK (2014). *UK Continental Shelf Offshore Workforce Demographics Report 2014*.

<sup>81</sup> Close the Gap (2013). *Fixing the Leaky Pipeline: Securing a Supply of Skills in Scotland's Renewable Energy Sector? Working Paper 7*.

<sup>82</sup> Commission for Developing Scotland's Young Workforce (2014). *Education Working for All!* Edinburgh: Scottish Government.

<sup>83</sup> Oil and Gas UK (2014). *UK Continental Shelf Offshore Workforce Demographics Report 2014*.

<sup>84</sup> Close the Gap (2013). *Fixing the Leaky Pipeline: Securing a Supply of Skills in Scotland's Renewable Energy Sector? Working Paper 7*.

- The Campaign for Science and Engineering (which has relevance to the energy, life sciences, universities, chemical sciences, construction, engineering and ICT and digital technologies sectors) found<sup>85</sup> that there had been significant progress in terms of improving the representation of disabled people in STEM education and employment. However, key issues remain including improving funding for young disabled people wishing to pursue STEM through higher education or Modern Apprenticeships, ensuring disabled students are encouraged to consider careers in STEM fields and encouraging better monitoring of the topic. The availability of Access to Work funds for MAs (as they are employed) and the introduction of the Employer Recruitment Incentive (ERI) payments (with up to £1,500 for employers who recruit a targeted young person (TYP) – including those aged 16-24 with a disability – as a Modern Apprentice or into employment of 15 hours or more per week) are both attempts to address this issue.

### *Ethnicity*

- The Campaign for Science and Engineering (which has relevance to the energy, life sciences, universities, chemical sciences, construction, engineering and ICT and digital technologies sectors) found<sup>86</sup> that in England young people from most ethnic minority groups tend to be more likely to be undertaking A-levels in Biology, Chemistry and Mathematics. The key exception to this is young people from Caribbean backgrounds. This feeds through into a high proportion of HE students in STEM subjects coming from ethnic minority backgrounds. Looking at the workforce, 32% of ethnic minority males are employed in 'STEM occupations' compared to 23% of white males. The equivalent figures are 8% and 5% for females.

### *Sexual Orientation*

- The Institute for Engineering and Technology undertook a survey of engineers<sup>87</sup> in June 2014 found that 34% were not open about their sexual orientation at work, 8% felt that their colleagues discriminated against them as a result of their sexual orientation and 18% felt that their sexual orientation creates barriers to their career progression. Engineers play key roles in not just engineering but also energy, chemical sciences and construction – so these findings are likely to affect all of these growth sectors.

### ***Skills Issues for Energy***

UKCES<sup>88</sup> project that employment in the energy sector is expected to expand by at least 4% between 2010 and 2020, with the strongest growth in occupations requiring higher level qualifications. In addition, there is likely to be a significant demand for new recruits to replace an ageing workforce, creating a strong demand for technical and engineering skills in the electricity, gas and water industries. In reviewing the key skills that are likely to be required, UKCES identify the following skills.

- Adaptability and transferability skills (to enable workers to learn and apply new technologies and processes).
- Environmental and sustainability awareness.
- Systems and risk analysis skills.

<sup>85</sup> Campaign for Science and Engineering (2014). *Improving Diversity in STEM*.

<sup>86</sup> Campaign for Science and Engineering (2014). *Improving Diversity in STEM*.

<sup>87</sup> Engineering and Technology Magazine (2014). *LGBT Survey: E&T Hears from the Engineering Industry. Volume 9, Issue 7*.

<sup>88</sup> UKCES (2012). *Sector Skills Insights: Energy*.



- Entrepreneurial skills.
- Innovation skills (to identify opportunities and create new strategies).
- Communication and negotiation skills.
- Marketing skills (to promote products and services).
- Consulting skills (to advise consumers about green solutions and to spread the use of green technologies).
- Networking, IT and language skills (to perform in global markets).

In relation to skills supply, UKCES find some encouraging signs with more STEM university students and apprentices, along with increased workplace training. However there are some concerns – for example:

- Many STEM graduates find jobs outside STEM sectors, meaning that the energy sector needs to work hard to be seen as an attractive graduate destination.
- The UK relies heavily on international migration to supply skills relevant to the sector.
- While training activity is relatively high across the sector, the proportion of professional and technical staff in receipt of training is proportionally low. In addition, a relatively high proportion of training in the sector is induction or Health and Safety related.
- Although the incidence of skill shortages across the sector is below average, a significant proportion of employers identify problems recruiting process operatives.
- Skill gaps are below average, but where they occur affect process operatives, professional and associate professional occupations and managers.

## Financial and Business Services Key Indicators

Figure 45: Equalities in Financial and Business Services

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>Gender</b>									
• Females as % of all employees	57.0	56.2	↓	57.0	56.4	↓	57.3	51.5	↓
• Females as % of all self-employed	31.0	31.9	↑	31.8	30.6	↓	-	-	-
• Females as % of all directors (2014)	-	32.4	-	-	32.3	-	-	34.4	-
<b>Age</b>									
• Young people (16-25) as % of all employees	9.4	10.4	↑	9.2	10.1	↑	11.7	15.2	↑
• Young people (16-25) as % of all self-employed	0.5	1.0	↑	0.0	1.2	↑	-	-	-
• Young people (under 30) as % of all directors (2014)	-	2.1	-	-	2.0	-	-	2.3	-
• Older people (55 and over) as % of all employees	13.4	13.8	↑	12.8	13.5	↑	20.4	18.2	↓
• Older people (55 and over) as % of all self-employed	41.2	37.2	↓	40.5	35.8	↓	-	44.1	-
• Older people (60 and over) as % of all directors (2014)	-	20.6	-	-	20.6	-	-	20.1	-
<b>Disability</b>									
• Individuals with a health problem lasting more than 12 months as % of all employees	19.5	20.6	↑	19.4	21.0	↑	20.2	-	-
• Individuals with a health problem lasting more than 12 months as % of all self-employed	24.3	30.9	↑	24.6	32.0	↑	-	-	-
<b>Race</b>									
• Ethnic minorities as % of all employees	1.9	2.7	↑	2.0	2.9	↑	1.0	0.0	↓
• Ethnic minorities as % of all self-employed	0.5	1.9	↑	0.6	1.7	↑	-	2.9	-
• White Polish as % of all employees	-	0.7	-	-	0.7	-	-	-	-

Source: Annual Population Survey and FAME

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of protected characteristic between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of protected characteristic between 2009 and 2013.

## Key Research Findings

### Gender

- Metclaf and Rolfe (2009)<sup>89</sup> using the third quarter of the 2008 UK QLFS perform a thorough analysis of employment characteristics within the UK financial sector with regard to gender. They found that the female employment in 2008 had declined in relative terms since 2003, compared to a slight increase in the overall employment in the sector over the same period. They also found that women tend to work in smaller establishments, with a high concentration employed in administrative and secretarial jobs. In contrast, only a small proportion of managerial jobs were filled by women. They found that the occupational segregation by gender was much more pronounced than in the economy as a whole. Linked to this, 39% of men working in finance have a degree, compared to just 20% of women.
- Perfect (2012)<sup>90</sup> indicates that the sex pay gap in the UK was widest in financial and insurance sector, which had also the highest male median hourly earnings. The gender pay gap in this sector accounts to around 36.7%, approximately 4 times wider than the average sex pay gap across all industries (9.6%). This gap translates to £8.02. Metcalf and Rolfe (2009) found that the gender pay gap for those working full-time in the finance sector was approximately double than that in the UK economy as whole, whilst for part-time workers it is the same gap as the economy as a whole. In addition, both the full-time and part-time gender pay gaps increased as wages rose.

### Age

- Metcalf and Rolfe (2009)<sup>91</sup> note that the financial sector employs a relatively high percentage of people in the 25 to 39 age range and fewer at older ages.

### Disability

- Coleman *et al.* (2013)<sup>92</sup> undertook an analysis of which sectors employed the most disabled people. Banking and finance has the third highest proportion, with 15% of disabled people working in this sector.
- Research undertaken on behalf of the Equality and Human Rights Commission found that the proportion the profile of disabled people across sectors is very similar to that of non-disabled people. 15% of disabled people work in banking and finance compared to 17% of non-disabled people.

<sup>89</sup> Metcalf, H and Rolfe, H. (2009) *Employment and earnings in the finance sector: A gender analysis*. Equality and Human Rights Commission Research, Research report: 17

<sup>90</sup> Perfect, D. (2012). *Gender Pay Gaps, 2012*. Equality and Human Rights Commission

<sup>91</sup> Metcalf, H and Rolfe, H. (2009) *Employment and earnings in the finance sector: A gender analysis*. Equality and Human Rights Commission Research, Research report: 17

<sup>92</sup> Coleman N., Wendy Sykes, W. and Groom, C. (2013) *Barriers to employment and unfair treatment at work: a quantitative analysis of disabled people's experiences*. Equality and Human Rights Commission

### *Sexual Orientation*

- As part of their efforts to support a more supportive work environment for lesbian, gay and bisexual people, Stonewall publishes a list of 'top 100 employers'. In 2013, the top 5 employers for Scotland<sup>93</sup> included 3 firms in the financial and business services sector (Barclays, Lloyds Banking Group and Clydesdale Bank).

### ***Skills Issues for Financial and Business Services***

The Skills Investment Plan for financial services<sup>94</sup> was published in 2013. The priority actions set out include:

- Improving the attractiveness of the sector to new and experienced talent through engagement with schools, colleges and universities, online presence and marketing materials. This requires undertaking research to establish key trends and opportunities and developing materials to target different audience (for example, teachers, pupils, graduates, parents, etc.).
- Improving work readiness amongst potential recruits. This includes actions to improve skills and competencies of young people leaving education, alongside provision of internships and work placements.
- Developing and retaining key skills of those already in the financial services sector. This will include the development of higher-level Modern Apprenticeship frameworks for key job roles and reviewing current further and higher education provision to ensure it is delivering the skills needed by the sector.
- Developing a more responsive skills system by increasing involvement of the industry in the design of skills provision.

A Skills Investment Plan for the business services sub-sector has not been developed. However, a number of one-off studies<sup>95</sup> have been undertaken looking at the skills needs of the business services sectors. The literature suggests the key skills needs facing the sector are:

- Business acumen.
- Interpersonal skills.
- Specialist technical skills to deal with requirements for increased regulations (such as around environmental legislation; data protection).
- New entrants increasingly need to add value from day one.

In terms of current issues facing the sector, the key issues raised in the literature include:

- Across all sectors of the economy, there is an increasing emphasis on increasing efficiency and cutting costs. Given that the role of professional and business services is to service other sectors, these pressures have been acutely felt in the sector.
- Workforce needs to be more adept in use of ICT to enhance business processes and client engagement activities.

<sup>93</sup> Stonewall Scotland (2013). *Stonewall Top 100 Employers 2013. The Workplace Equality Index.*

<sup>94</sup> Skills Development Scotland and Scottish Financial Enterprise (2013). *The Skills Investment Plan for Scotland's Financial Services Sector.*

<sup>95</sup> HM Government (2013) *Growth is Our Business: A Strategy for Professional and Business Services*; Scottish Government (2010) *Financial and Business Services: Key Sector Report*; UKCES (2012) *Sector Skills Insight: Professional and Business Services.*

- Sector has traditionally drawn from a relatively narrow social strata, resulting in a workforce that is not fully representative of the clients and society it serves. This also means that the sector is not tapping into its widest available talent pool.

## Food and Drink

### Key Indicators

Figure 46: Equalities in Food and Drink

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>Gender</b>									
• Females as % of all employees	29.3	31.7	↑	33.3	32.1	↓	17.1	30.5	↑
• Females as % of all self-employed	17.2	20.1	↑	17.6	19.6	↑	16.2	21.1	↑
• Females as % of all directors (2014)	-	31.4	-	-	31.9	-	-	29.9	-
<b>Age</b>									
• Young people (16-25) as % of all employees	11.0	14.2	↑	11.8	14.7	↑	8.6	12.7	↑
• Young people (16-25) as % of all self-employed	3.8	2.7	↓	3.6	3.4	↓	4.1	1.3	↓
• Young people (under 30) as % of all directors (2014)	-	2.7	-	-	2.5	-	-	3.0	-
• Older people (55 and over) as % of all employees	22.2	20.9	↓	22.2	20.5	↓	22.1	19.8	↓
• Older people (55 and over) as % of all self-employed	39.7	47.8	↑	36.4	43.2	↑	47.3	56.6	↑
• Older people (60 and over) as % of all directors (2014)	-	24.3	-	-	23.3	-	-	27.9	-
<b>Disability</b>									
• Individuals with a health problem lasting more than 12 months as % of all employees	17.7	20.9	↑	18.9	22.5	↑	13.9	-	-
• Individuals with a health problem lasting more than 12 months as % of all self-employed	29.1	41.0	↑	30.0	50.0	↑	27.0	-	-
<b>Race</b>									
• Ethnic minorities as % of all employees	2.0	0.4	↓	1.9	0.6	↓	2.1	0.0	↓
• Ethnic minorities as % of all self-employed	0.0	0.9	↑	0.0	1.4	↑	0.0	0.0	-
• White Polish as % of all employees	-	9.0	-	-	10.6	-	-	4.2	-

Source: Annual Population Survey and FAME

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of protected characteristic between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of protected characteristic between 2009 and 2013.

### Key Research Findings

Very limited research is available on equalities issues in the food and drink sector.

#### Ethnicity

- Forced labour is estimated to affect between 3,500 and 5,000 individuals within the UK – with it most common in relation to sectors characterised by low-skilled, low-paid manual work including domestic work, food processing, agriculture, hospitality, cleaning, care, and construction<sup>96</sup>. Whilst forced labour can affect anyone, there is an overlap between forced labour and migration – meaning many of those affected are from an ethnic minority background, including recent migrants from the EU Accession Countries. Research into forced labour in the food industry in the UK<sup>97</sup>, found 14 different types of practice, including the use of upfront fees to secure work, threats and bullying, the use of dismissal as a disciplinary mechanism, excessive use of productivity targets and monitoring, overwork and underwork (with a particular focus on providing just enough hours to enable workers to pay debts but leaving no additional money to enable them to save).

#### Skills Issues for Food and Drink

UKCES<sup>98</sup> has identified the following skills needs for the sector:

- Increase business and management skills, such as business planning, project management and risk management.
- Knowledge and appreciation of the sciences and application of ICT to deliver sustainable intensification and precision farming.
- Crucial are setting up structures to demonstrate, record and promote the professionalization of the sector, succession planning, environmental management skills, risk management, scientific knowledge, technology transfer and better ICT skills.
- High priority skills are marketing, market analysis, planning and project management, woodland management, crop agronomy and pest/disease identification and control; and practical conservation skills.
- Medium priority skills include public engagement, formal recognition of technical and paraprofessional roles, negotiation and influencing skills, customer care, communication and presentation skills.

As with the other key sectors, a Skills Investment Plan for Scotland's food and drink sector<sup>99</sup> has been developed in consultation with industry partners. With some overlaps with the UKCES findings outlined above, the skills priorities for the sector are as follows:

- Raising the attractiveness of the sector to new entrants and retaining talent.
  - Improving young people's awareness of career opportunities in the sector.
  - Improving the attractiveness of the sector as a place to work.
  - Effective employer engagement in schools and curriculum development.
  - Using Modern Apprenticeships to flexibly meet the needs of employers and address skills shortages.

<sup>96</sup> Skrivankova, K. (2014). *Forced Labour in the United Kingdom*. Joseph Rowntree Foundation.

<sup>97</sup> Scott, S., Craig, G. and Geddes, A. (2012). *Experiences of Forced Labour in the UK Food Industry*. Joseph Rowntree Foundation.

<sup>98</sup> UKCES (2012). *Agriculture, Forestry and Fishing Sector Skills Assessment 2012*.

<sup>99</sup> Skills Development Scotland (2012) *Skills Investment Plan for Scotland's Food and Drink Sector*.

- Supporting company capacity to innovate.
  - Quantifying demand for food science and technology skills in business and identifying sustainable ways of meeting this demand.
  - Increasing the range of companies undertaking product development and innovation.
  - Ensuring companies have access to the right skills for innovation and product development.
  - Connecting companies with FE and HE sectors.
- Driving leadership and management excellence in the sector.
  - Supporting the creation of leaders in growth businesses.
  - Increasing levels of management supervisory training within businesses.
  - Stimulating demand within businesses for leadership and management skills.
- Supporting the development of skills for growth in the workplace.
  - Promoting the benefits of collaboration.
  - Assisting companies with UK market development.
  - Growing international exports and increasing the range of companies who export.
  - Helping businesses reduce waste and increase sustainability.



**Life Sciences**  
**Key Indicators**

**Figure 47: Equalities in Life Sciences**

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>Gender</b>									
• Females as % of all employees	48.8	60.9	↑	51.4	63.3	↑	-	-	-
• Females as % of all self-employed	-	-	-	-	-	-	-	-	-
• Females as % of all directors (2014)	-	17.1	-	-	17.1	-	-	17.4	-
<b>Age</b>									
• Young people (16-25) as % of all employees	5.8	3.3	↓	6.5	3.8	↓	-	-	-
• Young people (16-25) as % of all self-employed	-	-	-	-	-	-	-	-	-
• Young people (under 30) as % of all directors (2014)	-	1.3	-	-	1.4	-	-	0.0	-
• Older people (55 and over) as % of all employees	16.5	15.2	↓	16.8	12.7	↓	-	-	-
• Older people (55 and over) as % of all self-employed	-	-	-	-	-	-	-	-	-
• Older people (60 and over) as % of all directors (2014)	-	17.8	-	-	18.1	-	-	13.5	-
<b>Disability</b>									
• Individuals with a health problem lasting more than 12 months as % of all employees	23.7	-	-	23.1	-	-	-	-	-
• Individuals with a health problem lasting more than 12 months as % of all self-employed	-	26.8	-	-	-	-	-	-	-
<b>Race</b>									
• Ethnic minorities as % of all employees	2.5	3.3	↑	2.8	2.5	↓	-	-	-
• Ethnic minorities as % of all self-employed	-	-	-	-	-	-	-	-	-
• White Polish as % of all employees	-	0.0	-	-	0.0	-	-	-	-

Source: Annual Population Survey and FAME

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of protected characteristic between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of protected characteristic between 2009 and 2013.

## Key Research Findings

### Gender

- The Royal Society of Edinburgh developed a strategy for women in science, technology, engineering and mathematics (STEM) in 2012<sup>100</sup>. The findings are relevant to a number of sectors including life sciences. The study identified the key barriers to the participation of women in STEM as being:
  - The nature and organisation of STEM – with qualifications to enter the sector taking a long time to acquire, the high levels of career insecurity and long and irregular working hours – make it more difficult for women to enter and progress within the sector. Women face particular issues after becoming partners as some sectors are unwilling to consider part-time or flexible working patterns.
  - Implicit bias, with employers in the sector having not considered who their systems and processes can be discriminatory. A particular area of concern is in relation to promotion, with ‘male’ attributes or qualities being prioritised over others.
  - Family responsibility and career breaks, with caring responsibilities continuing to fall disproportionately on women.
  - Access to research resources, with women holding fewer research grants than men. A key problem is that even where grant applications are ‘gender neutral’, female academics are less likely to apply for funding, and when they do request small grants and for shorter timescales.
- The Commission for Developing Scotland’s Young Workforce (also known as the Wood Commission)<sup>101</sup> suggested that the gender balance of newer industries such as life sciences, renewables (part of energy) and IT have a gender imbalance.
- Research by Close the Gap in 2010<sup>102</sup> found that women are under-represented in senior and managerial roles in all STEM areas. This is true even for bioscience and medicine where women are over-represented in the sector as a whole. This is referred to as the ‘leaky pipeline’.

### Age

- An issue facing a number of the growth sectors (energy, life sciences, universities, chemical sciences, engineering and construction) is the perception of science amongst young people. Research by the Wellcome Trust<sup>103</sup> found that generally young people in school enjoyed and had an interest in science. Those young people that were most engaged in school tended to have the most positive views of science. However, some are put off from pursuing science subjects as they are seen as being more content heavy than other subjects and some feel the science curriculum is insufficiently connected to contemporary life. In addition, many felt that science did not help them develop the technical skills they may need for a career in a science-related sector.

---

<sup>100</sup> The Royal Society of Edinburgh (2012). Tapping All Our Talents. Women in Science, Technology, Engineering and Mathematics: A Strategy for Scotland.

<sup>101</sup> Commission for Developing Scotland’s Young Workforce (2014). *Education Working for All!* Edinburgh: Scottish Government.

<sup>102</sup> Close the Gap (2010). Women: The Missing Link? A Discussion Paper on Occupational Segregation Within Science, Engineering and Technology.

<sup>103</sup> Wellcome Trust (2011). *Exploring Young People’s Views on Science Education*.

### Disabilities

- The Campaign for Science and Engineering (which has relevance to the energy, life sciences, universities, chemical sciences, construction, engineering and ICT and digital technologies sectors) found<sup>104</sup> that there had been significant progress in terms of improving the representation of disabled people in STEM education and employment. However, key issues remain including improving funding for young disabled people wishing to pursue STEM through higher education or Modern Apprenticeships, ensuring disabled students are encouraged to consider careers in STEM fields and encouraging better monitoring of the topic. The availability of Access to Work funds for MAs (as they are employed) and the introduction of the Employer Recruitment Incentive (ERI) payments (with up to £1,500 for employers who recruit a targeted young person (TYP) – including those aged 16-24 with a disability – as a Modern Apprentice or into employment of 15 hours or more per week) are both attempts to address this issue.

### Ethnicity

- The Campaign for Science and Engineering (which has relevance to the energy, life sciences, universities, chemical sciences, construction, engineering and ICT and digital technologies sectors) found<sup>105</sup> that in England young people from most ethnic minority groups tend to be more likely to be undertaking A-levels in Biology, Chemistry and Mathematics. The key exception to this is young people from Caribbean backgrounds. This feeds through into a high proportion of HE students in STEM subjects coming from ethnic minority backgrounds. Looking at the workforce, 32% of ethnic minority males are employed in ‘STEM occupations’ compared to 23% of white males. The equivalent figures are 8% and 5% for females.

### Skills Issues for Life Sciences

The SIP for life sciences<sup>106</sup> was published in 2014 and sets out its vision as “*developing and retaining a talent pool of international calibre to support the growth of the Scottish life sciences sector*”. The key issues facing the sector are identified as:

- Gender imbalances across different sub-sectors and the lack of females in senior roles.
- Changing skills needs of the sector – requiring the education sector to be agile to respond.
- Need for business and commercial acumen amongst staff.
- Need for skills to manage and analyse large datasets.
- Greater need for individuals that can work across disciplines.

The SIP sets out the approach that will be taken to addressing these issues namely:

- Raising awareness of the range of career opportunities in order to attract more talent into life sciences.
  - Building graduate readiness.
  - Improving the attractiveness of the sector to new entrants.
  - Attracting and anchoring key skills.

<sup>104</sup> Campaign for Science and Engineering (2014). *Improving Diversity in STEM*.

<sup>105</sup> Campaign for Science and Engineering (2014). *Improving Diversity in STEM*.

<sup>106</sup> Skills Development Scotland and The Scottish Government (2014). *Skills Investment Plan for Scotland’s Life Sciences Sector*.

- Refresh research to ensure we meet employer demand.
  - Building accessible and responsive skills system.

## Sustainable Tourism

### Key Indicators

Figure 48: Equalities in Sustainable Tourism

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>Gender</b>									
• Females as % of all employees	55.3	57.3	↑	54.7	57.9	↑	58.9	53.6	↓
• Females as % of all self-employed	50.3	50.9	↑	47.9	47.3	↓	57.1	59.2	↑
• Females as % of all directors (2014)	-	31.5	-	-	30.6	-	-	36.3	-
<b>Age</b>									
• Young people (16-25) as % of all employees	35.1	34.1	↓	36.4	34.9	↓	28.0	29.0	↑
• Young people (16-25) as % of all self-employed	0.0	1.3	↑	0.0	0.9	↑	0.0	2.0	↑
• Young people (under 30) as % of all directors (2014)	-	3.8	-	-	4.0	-	-	2.9	-
• Older people (55 and over) as % of all employees	13.2	11.5	↓	11.7	9.3	↓	21.1	25.3	↑
• Older people (55 and over) as % of all self-employed	39.6	47.8	↑	30.8	36.4	↑	64.3	73.5	↑
• Older people (60 and over) as % of all directors (2014)	-	20.3	-	-	20.1	-	-	21.9	-
<b>Disability</b>									
• Individuals with a health problem lasting more than 12 months as % of all employees	20.9	19.8	↓	21.5	22.9	↑	17.3	4.8	↓
• Individuals with a health problem lasting more than 12 months as % of all self-employed	24.1	-	-	20.8	25.0	↑	34.3	-	-
<b>Race</b>									
• Ethnic minorities as % of all employees	5.1	5.5	↑	5.6	5.9	↑	2.3	2.9	↑
• Ethnic minorities as % of all self-employed	6.9	4.4	↓	9.4	6.4	↓	0.0	0.0	-
• White Polish as % of all employees	-	2.6	-	-	2.6	-	-	2.9	-

Source: Annual Population Survey and FAME

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of protected characteristic between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of protected characteristic between 2009 and 2013.

## Key Research Findings

### Gender

- A report undertaken by the Institute of Hospitality (2011)<sup>107</sup> found that there was no significant difference in the levels of employment between men and women in the hospitality sector.
- Research by Women 1<sup>st</sup><sup>108</sup> suggests that the key barriers preventing women from progressing into more senior roles within the tourism sector are the difficulty of combining senior level positions and caring responsibilities; an organisational culture at a senior level that is predominately male; preconceptions about women's ability to undertake senior roles; a lack of networking by women; and the lack of women in senior roles discouraging women from being ambitious.
- Perfect (2012)<sup>109</sup> found that the lowest gender pay gap was in the accommodation and food sector, although this was also the sector with the lowest median hourly wage.
- Research by IPPR and the Resolution Foundation<sup>110</sup> found that the industries with highest proportion of employees earning less than the Living Wage are hotels and restaurants, wholesale and retail, administration and the arts. Whilst these are defined more broadly than the growth sectors, this would suggest that tourism and the creative industries are the sectors with the largest proportion of staff earning less than the Living Wage. Women and young people (16-24) are more likely to be earning below the living wage than other groups.

### Age

- In relation to the hospitality sector, the Institute of Hospitality (2011<sup>111</sup>) found that the percentage of older workers (aged 50 and over) is low. They projected that:
  - Younger workers, who traditionally consisted the largest age-group in the hospitality sector, are expected to decline in the future
  - Declines are also expected for workers aged 35-44 – the main 'management' cohort in hospitality
  - The largest increase in the workforce is expected to happen amongst those aged 50 and over.
- Research by the Joseph Rowntree Foundation<sup>112</sup> found 1.8 million of those earning less than the Living Wage are under 30 – with this age group concentrated in hotels, bars and restaurants jobs. In contrast 57% of low paid jobs in the public sector (600,000 jobs) are done by employees aged 40 or over.
- The Institute of Hospitality (2011) found that there was a different pattern of employment of different age bands across different sub-sectors, with young people concentrated in the pubs, bars and nightclubs sub-sector. Young people are less common in hotels and restaurants, where older groups are more common.

<sup>107</sup> Institute of Hospitality (2011). *The case for recruiting and retaining older workers: a business imperative for the Hospitality sector*. Knowledge Pack.

Available at: [https://www.instituteofhospitality.org/Knowledge\\_Pack\\_HOSPITALITY\\_Dec2011\\_v2](https://www.instituteofhospitality.org/Knowledge_Pack_HOSPITALITY_Dec2011_v2)

<sup>108</sup> Women 1<sup>st</sup> (2010). *The Case for Change: Women, Working in Hospitality, Leisure, Travel and Tourism*.

<sup>109</sup> Perfect, D. (2012). *Gender Pay Gaps, 2012*. Equality and Human Rights Commission

<sup>110</sup> IPPR and Resolution Foundation (2013). *Beyond the Bottom Line: The Challenges and Opportunities of a Living Wage*.

<sup>111</sup> Institute of Hospitality (2011). *The case for recruiting and retaining older workers: a business imperative for the Hospitality sector*. Knowledge Pack.

Available at: [https://www.instituteofhospitality.org/Knowledge\\_Pack\\_HOSPITALITY\\_Dec2011\\_v2](https://www.instituteofhospitality.org/Knowledge_Pack_HOSPITALITY_Dec2011_v2)

<sup>112</sup> Joseph Rowntree Foundation (2013). *Monitoring Poverty and Social Exclusion*.

### Disability

- Coleman *et al.* (2013)<sup>113</sup> undertook an analysis of which sectors employed the most disabled people. Distribution, hotels and restaurants – within which tourism sits had the second highest proportion, with 18% of disabled people working in this sector.
- Research undertaken on behalf of the Equality and Human Rights Commission found that the proportion the profile of disabled people across sectors is very similar to that of non-disabled people. 18% of disabled people work in distribution, hotels and restaurants (which is aligned with tourism) compared to 19% of non-disabled people.

### Ethnicity

- The Scottish Government (2013)<sup>114</sup> found that people from ethnic minority backgrounds are more likely to work in distribution, hotels and restaurants compared with those with a white background.
- Research by the Resolution Foundation<sup>115</sup> found that 48% of workplaces that used zero hours contracts employed non-UK nationals, compared to just 25% of workplaces that did not. As outlined earlier, the analysis of the use of zero hours contracts across different sectors undertaken by the Resolution Foundation, would suggest that tourism and creative industries are the growth sectors most likely to be using zero hours contracts.

### Skills Issues for Sustainable Tourism

The SIP for tourism<sup>116</sup> was published in 2013 and sets out four 'strategic skills priorities' that must be addressed if the Tourism Scotland 2020 vision is to be achieved. These are:

- Improving management, leadership and enterprise in the sector.
- Ensuring staff have the skills to deliver a high quality visitor experience
- Raising the attractiveness of sector to new entrants.
- Ensuring appropriate and high quality training is available to sector.

6 'key actions' are proposed. Combined, these will help ensure that the 'strategic skills priorities' are met. The actions are to:

- Invest in local structures to enable businesses to work together, identify skills needs and influence local provision.
- Address the perceived gaps in skills (such as peer learning; human resource (HR) and people management for non-HR specialists; developing commercial awareness for staff; and developing specialist customer service skills in use of social media and use of market intelligence).
- Map and then market 'business development' provision available for small tourism managers/owners to help them understand and meet customer needs, market their products/services and to collaborate with other businesses.

---

<sup>113</sup> Coleman N., Wendy Sykes, W. and Groom, C, (2013) *Barriers to employment and unfair treatment at work: a quantitative analysis of disabled people's experiences*. Equality and Human Rights Commission

<sup>114</sup> Scottish Government (2013) *Scottish Government Equality Outcomes: Ethnicity Evidence Review*. Edinburgh: Scottish Government Social Research

<sup>115</sup> Pennycook, M., Cory, G. and Alakeson, V. (2013). *A Matter of Time. The Rise of Zero-Hours Contracts*. Resolution Foundation.

<sup>116</sup> Skills Development Scotland. (2013). *Skills Investment Plan for the Scottish Tourism Sector*.

- Instigate a marketing campaign to increase uptake of training that will improve visitor experience, including customer service, management and leadership and technical skills.
- Ensure continued delivery of training and education that develops key vocational skills.
- Develop a programme of activities to capitalise on headline events to raise awareness and status of tourism occupations. This should build on and strengthen initiatives and programmes already in place.



## Universities

### Key Indicators

Figure 49: Equalities in Universities

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>Gender</b>									
• Females as % of all employees	55.8	61.7	↑	57.1	61.3	↑	-	-	-
• Females as % of all self-employed	-	-	-	-	-	-	-	-	-
• Females as % of all directors (2014)	-	30.9	-	-	28.4	-	-	38.3	-
<b>Age</b>									
• Young people (16-25) as % of all employees	4.7	3.0	↓	4.6	3.1	↓	-	-	-
• Young people (16-25) as % of all self-employed	-	-	-	-	-	-	-	-	-
• Young people (under 30) as % of all directors (2014)	-	2.4	-	-	1.8	-	-	3.0	-
• Older people (55 and over) as % of all employees	23.6	24.1	↑	23.5	23.3	↓	-	-	-
• Older people (55 and over) as % of all self-employed	-	-	-	-	-	-	-	-	-
• Older people (60 and over) as % of all directors (2014)	-	26.3	-	-	24.3	-	-	-	-
<b>Disability</b>									
• Individuals with a health problem lasting more than 12 months as % of all employees	22.3	21.4	↓	22.3	19.1	↓	-	-	-
• Individuals with a health problem lasting more than 12 months as % of all self-employed	-	-	-	-	-	-	-	-	-
<b>Race</b>									
• Ethnic minorities as % of all employees	5.0	4.0	↓	5.2	4.1	↓	-	-	-
• Ethnic minorities as % of all self-employed	-	-	-	-	-	-	-	-	-
• White Polish as % of all employees	-	1.3	-	-	1.4	-	-	-	-

Source: Annual Population Survey and FAME

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of protected characteristic between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of protected characteristic between 2009 and 2013.

## Key Research Findings

### Gender

- The Royal Society of Edinburgh developed a strategy for women in science, technology, engineering and mathematics (STEM) in 2012<sup>117</sup>. The findings are relevant to a number of sectors including universities. The study identified the key barriers to the participation of women in STEM as being:
  - The nature and organisation of STEM – with qualifications to enter the sector taking a long time to acquire, the high levels of career insecurity and long and irregular working hours – make it more difficult for women to enter and progress within the sector. Women face particular issues after becoming partners as some sectors are unwilling to consider part-time or flexible working patterns.
  - Implicit bias, with employers in the sector having not considered who their systems and processes can be discriminatory. A particular area of concern is in relation to promotion, with ‘male’ attributes or qualities being prioritised over others.
  - Family responsibility and career breaks, with caring responsibilities continuing to fall disproportionately on women.
  - Access to research resources, with women holding fewer research grants than men. A key problem is that even where grant applications are ‘gender neutral’, female academics are less likely to apply for funding, and when they do request small grants and for shorter timescales.
- Research by Close the Gap in 2010<sup>118</sup> found that women are under-represented in senior and managerial roles in all STEM areas.
- A report undertaken by the Equality Challenge Unit (2014)<sup>119</sup> on higher education found that:
  - The majority of the professional and support staff within the higher education sector were female (63%), whilst the majority of academic staff are men (56%).
  - Looking at academic staff in more detail, women are more commonly employed in routine task provider roles, as assistant professional and administrative staff, professional/technical/senior administrative staff, research assistant and teaching assistant roles. All other academic roles are dominated by males. In particular, 78% of professors are male. In Science, Engineering and Technology (SET) subject areas, the proportion is even higher (83%).

### Age

- In the most recent Equality Challenge Unit report (2014)<sup>120</sup> into the higher education sector found that the age profile of the sector is different between nations of UK, with those aged under 30 accounting for 14% in Scotland, compared to 17% in England. In addition, they found that more than a third of professional and support staff were aged 66 and over. Looking at those aged 61 to 65, 25% worked in elementary occupations.

---

<sup>117</sup> The Royal Society of Edinburgh (2012). Tapping All Our Talents. Women in Science, Technology, Engineering and Mathematics: A Strategy for Scotland.

<sup>118</sup> Close the Gap (2010). Women: The Missing Link? A Discussion Paper on Occupational Segregation Within Science, Engineering and Technology.

<sup>119</sup> Equality Challenge Unit (2014) *Equality in higher education: statistical report 2014 Part 1: staff*.

<sup>120</sup> Equality Challenge Unit (2014) *Equality in higher education: statistical report 2014 Part 1: staff*.

- An issue facing a number of the growth sectors (energy, life sciences, universities, chemical sciences, engineering and construction) is the perception of science amongst young people. Research by the Wellcome Trust<sup>121</sup> found that generally young people in school enjoyed and had an interest in science. Those young people that were most engaged in school tended to have the most positive views of science. However, some are put off from pursuing science subjects as they are seen as being more content heavy than other subjects and some feel the science curriculum is insufficiently connected to contemporary life. In addition, many felt that science did not help them develop the technical skills they may need for a career in a science-related sector.

### *Disability*

- The statistical report conducted by the Equality Challenge Unit (2014)<sup>122</sup> into higher education found that the proportion of disabled people has increased from 2.2% in 2003/04 to 3.9% in 2012/13.
- The Campaign for Science and Engineering (which has relevance to the energy, life sciences, universities, chemical sciences, construction, engineering and ICT and digital technologies sectors) found<sup>123</sup> that there had been significant progress in terms of improving the representation of disabled people in STEM education and employment. However, key issues remain including improving funding for young disabled people wishing to pursue STEM through higher education or Modern Apprenticeships, ensuring disabled students are encouraged to consider careers in STEM fields and encouraging better monitoring of the topic. The availability of Access to Work funds for MAs (as they are employed) and the introduction of the Employer Recruitment Incentive (ERI) payments (with up to £1,500 for employers who recruit a targeted young person (TYP) – including those aged 16-24 with a disability – as a Modern Apprentice or into employment of 15 hours or more per week) are both attempts to address this issue.
- Research by the Equality Challenge Unit (2014) into the higher education sector found that disabled people are more common within professional and support staff (4.5%) than academic staff (3.4%).

### *Ethnicity*

- The Equality Challenge Unit (2014)<sup>124</sup> found that:
  - Ethnic minority staff are underrepresented in terms of those employed in the higher education sector on open/permanent contracts and in senior roles (managers, directors and senior officials).
  - Non-UK ethnic minorities are more likely to be found in Science, Engineering and Technology subjects (SET) compared to other subjects.
- The Campaign for Science and Engineering (which has relevance to the energy, life sciences, universities, chemical sciences, construction, engineering and ICT and digital technologies sectors) found<sup>125</sup> that in England young people from most ethnic minority groups tend to be more likely to be undertaking A-levels in Biology, Chemistry and Mathematics. The key exception to this is young

<sup>121</sup> Wellcome Trust (2011). *Exploring Young People's Views on Science Education*.

<sup>122</sup> Equality Challenge Unit (2014) *Equality in higher education: statistical report 2014 Part 1: staff*.

<sup>123</sup> Campaign for Science and Engineering (2014). *Improving Diversity in STEM*.

<sup>124</sup> Equality Challenge Unit (2014) *Equality in Higher Education: Statistical Report 2014 Part 1: Staff*.

<sup>125</sup> Campaign for Science and Engineering (2014). *Improving Diversity in STEM*.

people from Caribbean backgrounds. This feeds through into a high proportion of HE students in STEM subjects coming from ethnic minority backgrounds. Looking at the workforce, 32% of ethnic minority males are employed in 'STEM occupations' compared to 23% of white males. The equivalent figures are 8% and 5% for females.

- Looking within ethnic minorities, UK black staff who are employed as professors reveal a lower proportion compared with all other ethnic groups (4%). This is also the case for the non-UK black ethnic minority staff, but in a lower proportion (2.1%).

### ***Skills Issues for Universities***

There has not been a Skills Investment Plan developed for the universities sector and UKCES has not published a Sector Skills Assessment or Sector Skills Insight for this sector.

## Chemical Sciences

### Key Indicators

Figure 50: Equalities in Chemical Sciences

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>Gender</b>									
• Females as % of all employees	25.5	28.5	↑	26.7	31.6	↑	-	-	-
• Females as % of all self-employed	-	-	-	-	-	-	-	-	-
• Females as % of all directors (2014)	-	23.9	-	-	22.9	-	-	43.3	-
<b>Age</b>									
• Young people (16-25) as % of all employees	6.9	6.9	-	7.4	6.8	↓	-	-	-
• Young people (16-25) as % of all self-employed	-	-	-	-	-	-	-	-	-
• Young people (under 30) as % of all directors (2014)	-	0.9	-	-	0.9	-	-	0.0	-
• Older people (55 and over) as % of all employees	15.2	13.8	↓	15.6	14.5	↓	-	-	-
• Older people (55 and over) as % of all self-employed	-	-	-	-	-	-	-	-	-
• Older people (60 and over) as % of all directors (2014)	-	15.2	-	-	16.2	-	-	-	-
<b>Disability</b>									
• Individuals with a health problem lasting more than 12 months as % of all employees	21.4	23.7	↑	20.7	26.5	↑	-	-	-
• Individuals with a health problem lasting more than 12 months as % of all self-employed	-	-	-	-	-	-	-	-	-
<b>Race</b>									
• Ethnic minorities as % of all employees	1.4	2.3	↑	1.5	2.6	↑	-	-	-
• Ethnic minorities as % of all self-employed	-	-	-	-	-	-	-	-	-
• White Polish as % of all employees	-	1.5	-	-	1.7	-	-	-	-

Source: Annual Population Survey and FAME

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of protected characteristic between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of protected characteristic between 2009 and 2013.

## Key Research Findings

### Gender

- The Royal Society of Edinburgh developed a strategy for women in science, technology, engineering and mathematics (STEM) in 2012<sup>126</sup>. The findings are relevant to a number of sectors including chemical sciences. The study identified the key barriers to the participation of women in STEM as being:
  - The nature and organisation of STEM – with qualifications to enter the sector taking a long time to acquire, the high levels of career insecurity and long and irregular working hours – make it more difficult for women to enter and progress within the sector. Women face particular issues after becoming partners as some sectors are unwilling to consider part-time or flexible working patterns.
  - Implicit bias, with employers in the sector having not considered who their systems and processes can be discriminatory. A particular area of concern is in relation to promotion, with ‘male’ attributes or qualities being prioritised over others.
  - Family responsibility and career breaks, with caring responsibilities continuing to fall disproportionately on women.
  - Access to research resources, with women holding fewer research grants than men. A key problem is that even where grant applications are ‘gender neutral’, female academics are less likely to apply for funding, and when they do request small grants and for shorter timescales.
- Research by Close the Gap in 2010<sup>127</sup> found that women are under-represented in senior and managerial roles in all STEM areas.

### Age

- An issue facing a number of the growth sectors (energy, life sciences, universities, chemical sciences, engineering and construction) is the perception of science amongst young people. Research by the Wellcome Trust<sup>128</sup> found that generally young people in school enjoyed and had an interest in science. Those young people that were most engaged in school tended to have the most positive views of science. However, some are put off from pursuing science subjects as they are seen as being more content heavy than other subjects and some feel the science curriculum is insufficiently connected to contemporary life. In addition, many felt that science did not help them develop the technical skills they may need for a career in a science-related sector.

### Disability

- The Campaign for Science and Engineering (which has relevance to the energy, life sciences, universities, chemical sciences, construction, engineering and ICT and digital technologies sectors) found<sup>129</sup> that there had been significant progress in terms of improving the representation of disabled people in STEM education and employment. However, key issues remain including improving funding for young disabled people wishing to pursue STEM through higher education or Modern Apprenticeships, ensuring disabled students are encouraged to consider careers in STEM fields and encouraging better monitoring of the topic. The availability of Access to Work funds for MAs (as they are employed) and the introduction of the Employer Recruitment Incentive (ERI) payments (with up to

<sup>126</sup> The Royal Society of Edinburgh (2012). *Tapping All Our Talents. Women in Science, Technology, Engineering and Mathematics: A Strategy for Scotland.*

<sup>127</sup> Close the Gap (2010). *Women: The Missing Link? A Discussion Paper on Occupational Segregation Within Science, Engineering and Technology.*

<sup>128</sup> Wellcome Trust (2011). *Exploring Young People's Views on Science Education.*

<sup>129</sup> Campaign for Science and Engineering (2014). *Improving Diversity in STEM.*

£1,500 for employers who recruit a targeted young person (TYP) – including those aged 16-24 with a disability – as a Modern Apprentice or into employment of 15 hours or more per week) are both attempts to address this issue.

### *Sexual Orientation*

- The Institute for Engineering and Technology undertook a survey of engineers<sup>130</sup> in June 2014 found that 34% were not open about their sexual orientation at work, 8% felt that their colleagues discriminated against them as a result of their sexual orientation and 18% felt that their sexual orientation creates barriers to their career progression. Engineers play key roles in not just engineering but also energy, chemical sciences and construction – so these findings are likely to affect all of these growth sectors.

### ***Skills Issues for Chemical Sciences***

The Skills Investment Plan (SIP) for chemical sciences<sup>131</sup> sets out the key skills shortages and gaps facing the sector.

- The most difficult to fill posts are in technical and professional occupations.
- The market for science and engineering skills is highly competitive – meaning chemical sciences faces significant competition for these skills.
- Emerging technologies are likely to increase the level of skills and qualifications needed to a higher level.
- There is a shortage of apprentices in technical roles.
- There is a shortage of chemical process technicians qualified to HNC/HND level.
- Plant shutdowns and turnarounds mean demand for skills fluctuates.

The SIP proposes a number of actions to tackle these issues under the broad themes of:

- Attracting new entrants to the sector.
- Ensuring pathways are in place to bring experienced individuals from allied sectors into chemical sciences.
- Raising the skills of the existing workforce.
- Ensuring that skills provision meets employer needs.

---

<sup>130</sup> Engineering and Technology Magazine (2014). LGBT Survey: E&T Hears from the Engineering Industry. Volume 9, Issue 7.

<sup>131</sup> Skills Development Scotland (2014). *Skills Investment Plan for Scotland's Chemical Sciences Sector*.

## Construction Key Indicators

### Figure 51: Equalities in Construction

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>Gender</b>									
• Females as % of all employees	14.7	17.2	↑	15.2	16.7	↑	11.4	20.3	↑
• Females as % of all self-employed	2.3	4.5	↑	2.4	4.5	↑	1.6	4.2	↑
• Females as % of all directors (2014)	-	27.3	-	-	26.9	-	-	30.7	-
<b>Age</b>									
• Young people (16-25) as % of all employees	16.8	10.3	↓	16.4	10.2	↓	19.8	10.9	↓
• Young people (16-25) as % of all self-employed	2.3	3.3	↑	2.4	3.5	↑	1.6	2.8	↑
• Young people (under 30) as % of all directors (2014)	-	2.7	-	-	2.7	-	-	2.9	-
• Older people (55 and over) as % of all employees	15.8	20.5	↑	15.3	20.3	↑	18.6	21.9	↑
• Older people (55 and over) as % of all self-employed	28.0	31.7	↑	25.7	31.4	↑	42.6	33.3	↓
• Older people (60 and over) as % of all directors (2014)	-	23.0	-	-	22.6	-	-	27.0	-
<b>Disability</b>									
• Individuals with a health problem lasting more than 12 months as % of all employees	20.3	24.8	↑	21.2	25.6	↑	14.0	19.4	↑
• Individuals with a health problem lasting more than 12 months as % of all self-employed	22.6	26.0	↑	21.9	25.3	↑	27.1	-	-
<b>Race</b>									
• Ethnic minorities as % of all employees	0.7	0.7	-	0.7	0.8	↑	0.6	0.0	↓
• Ethnic minorities as % of all self-employed	1.6	0.0	↓	1.9	0.0	↓	0.0	0.0	-
• White Polish as % of all employees	-	1.1	-	-	1.2	-	-	0.8	-

Source: Annual Population Survey and FAME

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of protected characteristic between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of protected characteristic between 2009 and 2013.



## Key Research Findings

### Gender

- Perfect (2012)<sup>132</sup> found that the gender pay gap in construction was 11%.

### Age

- A House of Commons Cross-Party Parliamentarians' Inquiry in 2014<sup>133</sup> found that the key barriers to young people gaining employment in construction are the cyclical nature of the sector (with the recent recession leading to layoffs and a reduction in apprenticeship training) and the culture of sub-contracting. The latter means the sector is dominated by SMEs who can have less capacity to take on young people as apprentices to train them than larger firms.
- An issue facing a number of the growth sectors (energy, life sciences, universities, chemical sciences, engineering and construction) is the perception of science amongst young people. Research by the Wellcome Trust<sup>134</sup> found that generally young people in school enjoyed and had an interest in science. Those young people that were most engaged in school tended to have the most positive views of science. However, some are put off from pursuing science subjects as they are seen as being more content heavy than other subjects and some feel the science curriculum is insufficiently connected to contemporary life. In addition, many felt that science did not help them develop the technical skills they may need for a career in a science-related sector.

### Disability

- Coleman *et al.* (2013)<sup>135</sup> undertook an analysis of which sectors employed the most disabled people. The construction sector was ranked sixth, with 8% of all disabled people in employment working in this sector.
- Research undertaken on behalf of the Equality and Human Rights Commission found that the proportion the profile of disabled people across sectors is very similar to that of non-disabled people. 7% of disabled people work in construction compared to 8% of non-disabled.
- The Campaign for Science and Engineering (which has relevance to the energy, life sciences, universities, chemical sciences, construction, engineering and ICT and digital technologies sectors) found<sup>136</sup> that there had been significant progress in terms of improving the representation of disabled people in STEM education and employment. However, key issues remain including improving funding for young disabled people wishing to pursue STEM through higher education or Modern Apprenticeships, ensuring disabled students are encouraged to consider careers in STEM fields and encouraging better monitoring of the topic. The availability of Access to Work funds for MAs (as they are employed) and the introduction of the Employer Recruitment Incentive (ERI) payments (with up to

<sup>132</sup> Perfect, D. (2012). *Gender Pay Gaps, 2012*. Equality and Human Rights Commission

<sup>133</sup> House of Commons Cross-Party Parliamentarians Inquiry (2014). *No More Lost Generations: Creating Construction Jobs for Young People*.

<sup>134</sup> Wellcome Trust (2011). *Exploring Young People's Views on Science Education*.

<sup>135</sup> Coleman N., Wendy Sykes, W. and Groom, C, (2013) *Barriers to employment and unfair treatment at work: a quantitative analysis of disabled people's experiences*.

Equality and Human Rights Commission

<sup>136</sup> Campaign for Science and Engineering (2014). *Improving Diversity in STEM*.

£1,500 for employers who recruit a targeted young person (TYP) – including those aged 16-24 with a disability – as a Modern Apprentice or into employment of 15 hours or more per week) are both attempts to address this issue.

### *Ethnicity*

- Caplan *et al.* (2009)<sup>137</sup> conducted a review on race discrimination in the construction Industry in the UK. They argue that there is evidence that show the race discrimination is persistent in the construction industry, despite the fact that some progress has been made compared with the past.
- The Campaign for Science and Engineering (which has relevance to the energy, life sciences, universities, chemical sciences, construction, engineering and ICT and digital technologies sectors) found<sup>138</sup> that in England young people from most ethnic minority groups tend to be more likely to be undertaking A-levels in Biology, Chemistry and Mathematics. The key exception to this is young people from Caribbean backgrounds. This feeds through into a high proportion of HE students in STEM subjects coming from ethnic minority backgrounds. Looking at the workforce, 32% of ethnic minority males are employed in ‘STEM occupations’ compared to 23% of white males. The equivalent figures are 8% and 5% for females.
- In terms of the barriers to employment in construction for ethnic minorities, Caplan *et al.* (2014) found that many ethnic minorities are not aware of the wide range of vacancies in the construction industry. In addition, the construction sector shows some prevalence of word-of mouth recruitment and tendering practices and given that ethnic minorities are not part of the formal and informal networking, they end-up being discriminated. Many individuals from ethnic minorities are low-qualified, which affect their employability negatively. Suggestions offered in relation to tackle race discrimination within the construction industry including boosting representation of ethnic minority groups in higher education as well as on job training and apprenticeships, the introduction of an industry standard for equality monitoring as well as other practical strategies, and the need to regulate labour market in a way that recruitment practices to be fairer for ethnic minorities.
- In relation to construction, the main barriers for individuals from ethnic minority backgrounds are identified<sup>139</sup> as being the low status of the industry amongst ethnic minorities with, in particular, hard and inflexible working conditions and a perceived ‘laddish’ culture being seen as unattractive, a lack of careers advice to young people from ethnic minority backgrounds on careers in the sector and perceived racism amongst the sector. In addition, many ethnic minorities working in the sector perceive there to be a ‘glass ceiling’ to promotion and that firms lack good race relations policies and practices.
- Caplan *et al.* (2014) found that that ethnic minorities tend to be unrepresented in managerial and professional roles in the construction industry.

---

<sup>137</sup> Caplan, A., Aujla, A., Prosser, S. and Jackson, J. (2009). *Race Discrimination in the Construction Industry: A Thematic Review*. Equality and Human Rights Commission. Research Report: 23.

<sup>138</sup> Campaign for Science and Engineering (2014). *Improving Diversity in STEM*.

<sup>139</sup> Caplan, A., Aujla, A., Prosser, S. and Jackson, J. (2009). *Race Discrimination in the Construction Industry: A Thematic Review*. Equality and Human Rights Commission. Research Report: 23

### *Sexual Orientation*

- The Institute for Engineering and Technology undertook a survey of engineers<sup>140</sup> in June 2014 found that 34% were not open about their sexual orientation at work, 8% felt that their colleagues discriminated against them as a result of their sexual orientation and 18% felt that their sexual orientation creates barriers to their career progression. Engineers play key roles in not just engineering but also energy, chemical sciences and construction – so these findings are likely to affect all of these growth sectors.

### *Skills Issues for Construction*

To date, there has not been a Skills Investment Plan developed for the construction sector. However, Construction Skills CITB publishes an annual report into the skills needs of the sector (covering the UK as a whole). The most recent report<sup>141</sup> set out the key skills issues facing the sector as being:

- The recovery is leading to increasing demand for skills and for a small proportion of employers this is leading to a shortage of skilled labour.
- Recruitment difficulties did not appear to be specific to particular occupations – with a wide range of different type of occupations being identified by employers from labourers through skilled trades to managers and professional occupations.
- The main reasons vacancies were proving hard-to-fill was a lack of skilled individuals (mentioned by 80% of employers with hard-to-fill vacancies). However, applicants lacking the right attitude and motivation and a lack of experience (mentioned by 73% and 68% respectively) were also commonly mentioned.
- Hard-to-fill vacancies are impacting on the firms involved, leading to increase use of overtime and higher workloads for existing staff, increases in operating costs and lost business.
- There were also skills gaps amongst the existing workforce – in particular around technical/trade-specific skills, skills relating to health and safety and first aid and skills relation to legislation and regulations.

---

<sup>140</sup> Engineering and Technology Magazine (2014). *LGBT Survey: E&T Hears from the Engineering Industry. Volume 9, Issue 7.*

<sup>141</sup> Construction Skills CITB (2014). *Skills and Training in the Construction Industry 2014.*

## Engineering Key Indicators

Figure 52: Equalities in Engineering

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>Gender</b>									
• Females as % of all employees	18.7	18.1	↓	18.1	18.5	↑	24.4	14.1	↓
• Females as % of all self-employed	16.0	15.2	↓	18.0	14.0	↓	-	-	-
• Females as % of all directors (2014)	-	29.3	-	-	29.0	-	-	31.9	-
<b>Age</b>									
• Young people (16-25) as % of all employees	6.3	8.9	↑	6.0	9.0	↑	8.9	7.8	↓
• Young people (16-25) as % of all self-employed	0.0	0.0	-	0.0	0.0	-	-	-	-
• Young people (under 30) as % of all directors (2014)	-	2.6	-	-	2.4	-	-	4.7	-
• Older people (55 and over) as % of all employees	24.1	23.7	↓	24.2	23.7	↓	23.3	23.4	↑
• Older people (55 and over) as % of all self-employed	48.0	42.4	↓	47.5	42.1	↓	-	-	-
• Older people (60 and over) as % of all directors (2014)	-	24.9	-	-	25.1	-	-	21.2	-
<b>Disability</b>									
• Individuals with a health problem lasting more than 12 months as % of all employees	20.3	20.5	↑	20.2	20.8	↑	21.3	-	-
• Individuals with a health problem lasting more than 12 months as % of all self-employed	26.8	-	-	28.1	-	-	-	-	-
<b>Race</b>									
• Ethnic minorities as % of all employees	1.1	1.8	↑	1.2	1.9	↑	0.0	0.0	-
• Ethnic minorities as % of all self-employed	0.0	0.0	-	0.0	0.0	-	-	-	-
• White Polish as % of all employees	-	1.4	-	-	1.5	-	-	0.0	-

Source: Annual Population Survey and FAME

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of protected characteristic between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of protected characteristic between 2009 and 2013.

## Key Research Findings

### Gender

- The Royal Society of Edinburgh developed a strategy for women in science, technology, engineering and mathematics (STEM) in 2012<sup>142</sup>. The findings are relevant to a number of sectors including engineering. The study identified the key barriers to the participation of women in STEM as being:
  - The nature and organisation of STEM – with qualifications to enter the sector taking a long time to acquire, the high levels of career insecurity and long and irregular working hours – make it more difficult for women to enter and progress within the sector. Women face particular issues after becoming partners as some sectors are unwilling to consider part-time or flexible working patterns.
  - Implicit bias, with employers in the sector having not considered who their systems and processes can be discriminatory. A particular area of concern is in relation to promotion, with ‘male’ attributes or qualities being prioritised over others.
  - Family responsibility and career breaks, with caring responsibilities continuing to fall disproportionately on women.
  - Access to research resources, with women holding fewer research grants than men. A key problem is that even where grant applications are ‘gender neutral’, female academics are less likely to apply for funding, and when they do request small grants and for shorter timescales.
- Research by Close the Gap in 2010<sup>143</sup> found that women are under-represented in senior and managerial roles in all STEM areas.

### Age

- An issue facing a number of the growth sectors (energy, life sciences, universities, chemical sciences, engineering and construction) is the perception of science amongst young people. Research by the Wellcome Trust<sup>144</sup> found that generally young people in school enjoyed and had an interest in science. Those young people that were most engaged in school tended to have the most positive views of science. However, some are put off from pursuing science subjects as they are seen as being more content heavy than other subjects and some feel the science curriculum is insufficiently connected to contemporary life. In addition, many felt that science did not help them develop the technical skills they may need for a career in a science-related sector.

### Disability

- The Campaign for Science and Engineering (which has relevance to the energy, life sciences, universities, chemical sciences, construction, engineering and ICT and digital technologies sectors) found<sup>145</sup> that there had been significant progress in terms of improving the representation of disabled people in STEM education and employment. However, key issues remain including improving funding for young disabled people wishing to pursue STEM through higher education or Modern Apprenticeships, ensuring disabled students are encouraged to consider careers in STEM fields and encouraging better monitoring of the topic. The availability of Access to Work funds for MAs (as they are employed) and the introduction of the Employer Recruitment Incentive (ERI) payments (with up to

<sup>142</sup> The Royal Society of Edinburgh (2012). *Tapping All Our Talents. Women in Science, Technology, Engineering and Mathematics: A Strategy for Scotland.*

<sup>143</sup> Close the Gap (2010). *Women: The Missing Link? A Discussion Paper on Occupational Segregation Within Science, Engineering and Technology.*

<sup>144</sup> Wellcome Trust (2011). *Exploring Young People's Views on Science Education.*

<sup>145</sup> Campaign for Science and Engineering (2014). *Improving Diversity in STEM.*

£1,500 for employers who recruit a targeted young person (TYP) – including those aged 16-24 with a disability – as a Modern Apprentice or into employment of 15 hours or more per week) are both attempts to address this issue.

### *Ethnicity*

- The Campaign for Science and Engineering (which has relevance to the energy, life sciences, universities, chemical sciences, construction, engineering and ICT and digital technologies sectors) found<sup>146</sup> that in England young people from most ethnic minority groups tend to be more likely to be undertaking A-levels in Biology, Chemistry and Mathematics. The key exception to this is young people from Caribbean backgrounds. This feeds through into a high proportion of HE students in STEM subjects coming from ethnic minority backgrounds. Looking at the workforce, 32% of ethnic minority males are employed in ‘STEM occupations’ compared to 23% of white males. The equivalent figures are 8% and 5% for females.

### *Sexual Orientation*

- The Institute for Engineering and Technology undertook a survey of engineers<sup>147</sup> in June 2014 found that 34% were not open about their sexual orientation at work, 8% felt that their colleagues discriminated against them as a result of their sexual orientation and 18% felt that their sexual orientation creates barriers to their career progression. Engineers play key roles in not just engineering but also energy, chemical sciences and construction – so these findings are likely to affect all of these growth sectors.

### ***Skills Issues for Engineering***

The Skills Investment Plan for engineering and advanced manufacturing<sup>148</sup> sets out the key skills issues facing the sector. These include:

- Replacement demand (for example, due to retirement of older workers) will create a large number of employment opportunities, with a particular need for individuals in managerial, professional, skilled trades and process, plant and machine operative roles.
- The sector will increasingly require higher level qualifications.
- 18% of employers are currently reporting skills gaps, higher than in the economy as a whole. Skills shortages are reported in relation to project engineers, design engineers, IT specialists, technicians, welders, composite engineers, CNC machinists, fabricators, as well as in a number of niche areas.
- The sector faces competition for engineering graduates from other sectors, most notable oil and gas.
- Some employers have concerns about the skills of graduates and would value a greater focus on graduates developing practical skills and soft skills.
- The existing workforce has good skills, but these need to be strengthened to improve productivity and competitiveness. Modern Apprenticeships are seen as a particularly important tool here.
- The gender imbalance in the sector – with a need to encourage more women into the sector and to enable more women to return to the sector after having children.

<sup>146</sup> Campaign for Science and Engineering (2014). *Improving Diversity in STEM*.

<sup>147</sup> Engineering and Technology Magazine (2014). LGBT Survey: E&T Hears from the Engineering Industry. Volume 9, Issue 7.

<sup>148</sup> Skills Development Scotland (2014). *Skills Investment Plan for Scotland's Engineering and Advanced Manufacturing Sector*.

## ICT and Digital Technologies

### Key Indicators

Figure 53: Equalities in ICT and Digital Technologies

	Scotland			Scottish Enterprise			Highlands and Islands Enterprise		
	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013	2009	2013	Change 2009-2013
<b>Gender</b>									
• Females as % of all employees	21.7	19.4	↓	21.1	17.9	↓	-	-	-
• Females as % of all self-employed	19.4	11.4	↓	21.9	11.6	↓	-	-	-
• Females as % of all directors (2014)	-	28.8	-	-	28.7	-	-	31.8	-
<b>Age</b>									
• Young people (16-25) as % of all employees	2.9	6.5	↑	3.0	6.4	↑	-	-	-
• Young people (16-25) as % of all self-employed	5.6	2.3	↓	6.3	2.3	↓	-	-	-
• Young people (under 30) as % of all directors (2014)	-	3.7	-	-	3.7	-	-	3.2	-
• Older people (55 and over) as % of all employees	5.8	13.0	↑	5.3	10.9	↑	-	-	-
• Older people (55 and over) as % of all self-employed	30.6	36.4	↑	28.1	34.9	↑	-	-	-
• Older people (60 and over) as % of all directors (2014)	-	23.7	-	-	23.6	-	-	24.1	-
<b>Disability</b>									
• Individuals with a health problem lasting more than 12 months as % of all employees	18.1	28.6	↑	16.5	25.6	↑	-	-	-
• Individuals with a health problem lasting more than 12 months as % of all self-employed	20.0	-	-	19.4	-	-	-	-	-
<b>Race</b>									
• Ethnic minorities as % of all employees	5.1	3.5	↓	5.3	3.8	↓	-	-	-
• Ethnic minorities as % of all self-employed	0.0	0.0	-	0.0	0.0	-	-	-	-
• White Polish as % of all employees	-	0.6	-	-	0.6	-	-	-	-

Source: Annual Population Survey and FAME

Notes:

- '-': Cases where there are fewer than 30 cases in denominator.
- ↑: Sectors where there has been an increase in the representation of protected characteristic between 2009 and 2013.
- ↓: Sectors where there has been a decrease in the representation of protected characteristic between 2009 and 2013.

## Key Research Findings

### Gender

- The Royal Society of Edinburgh developed a strategy for women in science, technology, engineering and mathematics (STEM) in 2012<sup>149</sup>. The findings are relevant to a number of sectors including ICT and digital technologies. The study identified the key barriers to the participation of women in STEM as being:
  - The nature and organisation of STEM – with qualifications to enter the sector taking a long time to acquire, the high levels of career insecurity and long and irregular working hours – make it more difficult for women to enter and progress within the sector. Women face particular issues after becoming partners as some sectors are unwilling to consider part-time or flexible working patterns.
  - Implicit bias, with employers in the sector having not considered who their systems and processes can be discriminatory. A particular area of concern is in relation to promotion, with ‘male’ attributes or qualities being prioritised over others.
  - Family responsibility and career breaks, with caring responsibilities continuing to fall disproportionately on women.
  - Access to research resources, with women holding fewer research grants than men. A key problem is that even where grant applications are ‘gender neutral’, female academics are less likely to apply for funding, and when they do request small grants and for shorter timescales.
- Research by Close the Gap in 2010<sup>150</sup> found that women are under-represented in senior and managerial roles in all STEM areas.

### Age

- The Commission for Developing Scotland’s Young Workforce (also known as the Wood Commission)<sup>151</sup> suggested that the gender balance of newer industries such as life sciences, renewables (part of energy) and IT have a gender imbalance.
- An issue facing a number of the growth sectors (energy, life sciences, universities, chemical sciences, engineering and construction) is the perception of science amongst young people. Research by the Wellcome Trust<sup>152</sup> found that generally young people in school enjoyed and had an interest in science. Those young people that were most engaged in school tended to have the most positive views of science. However, some are put off from pursuing science subjects as they are seen as being more content heavy than other subjects and some feel the science curriculum is insufficiently connected to contemporary life. In addition, many felt that science did not help them develop the technical skills they may need for a career in a science-related sector.

### Disability

- The Campaign for Science and Engineering (which has relevance to the energy, life sciences, universities, chemical sciences, construction, engineering and ICT and digital technologies sectors) found<sup>153</sup> that there had been significant progress in terms of improving the representation of disabled people in STEM education and employment. However, key issues remain including improving

<sup>149</sup> The Royal Society of Edinburgh (2012). Tapping All Our Talents. Women in Science, Technology, Engineering and Mathematics: A Strategy for Scotland.

<sup>150</sup> Close the Gap (2010). Women: The Missing Link? A Discussion Paper on Occupational Segregation Within Science, Engineering and Technology.

<sup>151</sup> Commission for Developing Scotland’s Young Workforce (2014). *Education Working for All!* Edinburgh: Scottish Government.

<sup>152</sup> Wellcome Trust (2011). *Exploring Young People’s Views on Science Education*.

<sup>153</sup> Campaign for Science and Engineering (2014). *Improving Diversity in STEM*.



funding for young disabled people wishing to pursue STEM through higher education or Modern Apprenticeships, ensuring disabled students are encouraged to consider careers in STEM fields and encouraging better monitoring of the topic. The availability of Access to Work funds for MAs (as they are employed) and the introduction of the Employer Recruitment Incentive (ERI) payments (with up to £1,500 for employers who recruit a targeted young person (TYP) – including those aged 16-24 with a disability – as a Modern Apprentice or into employment of 15 hours or more per week) are both attempts to address this issue.

### *Ethnicity*

- The Campaign for Science and Engineering (which has relevance to the energy, life sciences, universities, chemical sciences, construction, engineering and ICT and digital technologies sectors) found<sup>154</sup> that in England young people from most ethnic minority groups tend to be more likely to be undertaking A-levels in Biology, Chemistry and Mathematics. The key exception to this is young people from Caribbean backgrounds. This feeds through into a high proportion of HE students in STEM subjects coming from ethnic minority backgrounds. Looking at the workforce, 32% of ethnic minority males are employed in ‘STEM occupations’ compared to 23% of white males. The equivalent figures are 8% and 5% for females.

### ***Skills Issues for ICT and Digital Technologies***

The Skills Investment Plan for ICT and digital technologies<sup>155</sup> found that the key skills issues for this sector included:

- Need to increase the attractiveness to the sector – especially to young people and women.
- Need to broaden entry routes into the sector to including greater use of Modern Apprenticeships.
- Meeting the increasing demand for graduate level skills.
- Ensuring individuals have both technological and commercial skills.
- Upskilling the existing workforce to ensure they are able to respond to changing technologies.

The key actions proposed included:

- Developing industry-led talent academies to help address immediate skills gaps and shortages.
- Helping employers develop marketing and other materials to help them recruit staff (including from outside the UK) to meet immediate needs.
- Developing toolkits, awards and professional development opportunities for teachers to help ensure teachers are aware of the needs of the ICT/digital technologies sector and are developing skills to enable young people to gain employment in the sector.
- Encouraging young people to use ICT and digital technologies for learning and raising their awareness of careers in the sector (for example through Computer Clubs, extra-curricular activities, mentors, events, etc.).
- Encouraging the development of work placements for students and teachers within the sector.
- Developing specific programmes to encourage women into the sector.

<sup>154</sup> Campaign for Science and Engineering (2014). *Improving Diversity in STEM*.

<sup>155</sup> Skills Development Scotland (2014). *The Skills Investment Plan for Scotland's ICT and Digital Technologies Sector*.

- Developing routes into the industry including through Modern Apprenticeships.
- Reviewing and improving current provision (including further and higher education provision) to ensure it meets ICT and digital technologies employer needs.
- Raising the profile of the sector through online careers resources, labour market intelligence, ambassadors, and promotional materials.

### Key Messages

1. The **creative industries** appears to be one of the growth sectors that is most open to individuals with protected characteristics – with women accounting for 50% of employees and 49% of the self-employed (which whilst a marginal underrepresentation compared to the female workforce as a whole is high compared to many other growth sectors), young people accounting for 11% of employees and 26% of employees having a health problem lasting more than 12 months. For most protected characteristics, their representation in the creative industries has grown between 2009 and 2013. One key exception to this is ethnic minorities – with only 1.4% of employees and 1.6% of the self-employed in the sector coming from an ethnic minority group. As well as being underrepresented, there is evidence of ethnic minorities being concentrated in particular occupations within the sector. The underrepresentation of this group within the sector has been recognised by Skillset, one of the Sector Skills Councils covering the sector, which has made recommendations to increase participation. Another potential area for concern is the low numbers of females progressing into management roles.
2. All of the groups examined in this study are underrepresented in the **energy** sector, except older workers. This is particularly marked for women who account for just 19% of employees and 9% of the self-employed in the sector. Notably, the proportion of employees and self-employed that are female has declined between 2009 and 2013 – and there were also declines in the proportion of young people and those with a health problem lasting more than 12 months employed in the sector. Whilst ethnic minorities remain underrepresented within the sector's employees, there has been an increase in their representation between 2009 and 2013 and they are over-represented within the self-employed in this sector. Key barriers to entry to this sector appear to relate to subject choice, reliance on networking for recruitment and the attractiveness of the sector to particular groups. There is also some evidence of women being concentrated in particular kind of roles (mainly administrative and secretarial roles, with some evidence that only 10% of jobs in development and supply chain activities for the renewable energy sector are held by women).
3. There is good representation of individuals with protected characteristics in the **financial and business services** and for most groups, their representation has increased between 2009 and 2013. For example, women accounted for 56% of employees in 2013 and ethnic minority groups accounted for 2.7%. However, issues remain with this sector as it has the largest gender pay gap and women being concentrated in particular roles, especially administrative and secretarial roles.
4. Two groups are over-represented in relation to the **food and drink** sector – young people (who account for 14% of employees) and those identifying their ethnicity as white Polish (9% of employees). The second group is particularly notable as it is an indication of the sector's role as an employer of recent migrants. In contrast, women are under-represented in the sector accounting for just 32% of employees. Whilst the gender pay gap is low in this sector, this is likely to reflect the low wages within the sector. Whilst older workers are under-

represented amongst the sector's employees, almost 50% of the self-employed are aged 55 and over – the joint highest of all growth sectors. This is likely to reflect the farming community – with concerns about the ageing of the group.

5. Women are over-represented within the **life sciences** workforce – accounting for 61% of employees in 2013. This is a substantial increase on the 2009 rate of 49%. However, there is a range of evidence that indicates that women find it difficult to progress within the sector (with long working hours, a lack of flexible working and a lack of access to research funding all contributing factors to this lack of progress). This is borne out by the small proportion of company directors that are female (just 17%). Other protected characteristics are generally underrepresented within the sector – although in the case of young people, this is likely to reflect the qualification requirements (graduate level or higher) of most jobs.
6. Young people account for 34% of employees in **tourism**. Women, ethnic minorities and individuals from a white Polish background are also overrepresented. There is a mixed picture over time – with, for example, the proportion of female employees and employees from an ethnic minority increasing between 2009 and 2013 but the proportion aged under 25, over 55 or have a health problem lasting more than 12 months declining. Individuals aged 55 and over account for almost 50% of those that are self-employed in the sector. This is likely to reflect both the capital investment needed for many tourism businesses (and the greater access to finance amongst older age groups) alongside the nature of the sector with many 'lifestyle' businesses established by older career changers. A key issue for the sector is that whilst women are overrepresented, they are concentrated within particular sub-sectors and occupations and can struggle to reach senior roles.
7. Most protected characteristics are well represented within the **universities**, with 62% of employees female, 24% aged over 55, 22% having a health problem lasting more than 12 months and 4% coming from an ethnic minority group. There has been an increase in the proportion of women and older people in the sector since 2009, and declines in the proportion with a health problem lasting more than 12 months and from an ethnic minority group. The one group that is significantly underrepresented is young people, who account for just 3% of employees in the sector. The strong performance on ethnicity is likely to reflect the international nature of the labour market for academic posts. Another equality issue facing the sector is continued gender split within the sector with women more likely to be in support roles and, amongst those in academic posts, less likely to be in senior positions.
8. Women, young people and older people are all under-represented within **chemical sciences**. Individuals from ethnic minority groups are also underrepresented – although the proportion employed in chemical sciences is higher than across the economy as a whole. The survey sample size means that data is limited for 2009 for this sector, but there has been an increase in the proportion of the workforce which is female, and a decline in the proportion aged over 55 since 2009. Whilst there is limited evidence on trends for the sector in relation to equalities issues, it faces many of the same issues as other sectors relating to STEM – with key issues being how to attract and retain women given the length of time it takes to develop skills, a lack of job security, long and irregular working hours and a lack of processes and procedures that enable the balancing of work and caring responsibilities. A key issue for disabled people is accessing the funding to develop the skills required for careers in STEM subjects.

9. The age profile of the **construction** industry is similar to economy as a whole – but women and individuals from ethnic minorities are underrepresented. Women accounted for just 17% of the workforce in 2013, although this was an improvement on the 2009 figure. Ethnic minorities accounted for just 0.7% of the construction workforce in 2013, the same proportion as in 2009. Reasons for the low representation of ethnic minorities within the sector include the low status of the sector amongst ethnic minority communities, a lack of awareness of the range of roles in the sector, word-of-mouth recruitment practices and negative perceptions of the sector. There is also some evidence of a ‘glass ceiling’ in relation to promotion to more senior roles for ethnic minorities. Individuals from ‘white Polish’ backgrounds account for 1.1% of construction employees.
10. Women are underrepresented within **engineering**, accounting for just 18% of employees in 2013. There had been a small decline in the proportion of employees in the sector that are female between 2009 and 2013. The issues women face in accessing and progressing within careers in engineering are similar to those faced in relation to energy and chemical sciences (with a significant overlap in terms of both the skills needed by these sectors and operating practices). Women account for a small proportion of those undertaking Modern Apprenticeships and college or university courses in engineering. In contrast older people are overrepresented in the sector – both as employees and self-employed – but the numbers have decreased between 2009 and 2013. Ethnic minorities are underrepresented but there has been significant improvement in their representation between 2009 and 2013. A further 1.4% of the workforce is white Polish.
11. Women, young people and older people are all underrepresented in the **ICT and digital technologies** sector, whilst those with long-term health problem are overrepresented. The sector also has one of the highest proportions of ethnic minorities – with 3.5% of employees coming from an ethnic minority background. Whilst progress has been made in relation to the representation of many protected characteristics within the sector, the representation of women and ethnic minorities declined between 2009 and 2013. In relation to women there has also been a decline in the numbers undertaking Modern Apprenticeships and college and university courses related to this sector. Whilst ICT and digital technologies as a sector are being affected by many of the same issues as others that draw on STEM subjects, it is unusual in that individuals with protected characteristics appear to becoming less common over time.

**APPENDIX 1: DEFINITIONS OF GROWTH SECTORS**
**Figure A1.1: Government Economic Strategy Growth Sectors**

Growth Sector	Definition (SIC 2007)
<b>Creative industries (including digital)</b>	<ul style="list-style-type: none"> <li>• SIC 73.11: Advertising agencies</li> <li>• SIC 73.12: Media representation</li> <li>• SIC 71.11: Architectural activities</li> <li>• SIC 90.03: Artistic creation (70%)</li> <li>• SIC 47.78/1: Retail sale in commercial art galleries</li> <li>• SIC 31.09: Manufacture of other furniture</li> <li>• SIC 16.29: Manufacture of other wood products (30%)</li> <li>• SIC 32.12: Manufacture of jewellery and related products</li> <li>• SIC 32.13: Manufacture of imitation jewellery and related articles</li> <li>• SIC 23.41: Manufacture of ceramic household and ornamental articles (35%)</li> <li>• SIC 23.49: Manufacture of other ceramic products (35%)</li> <li>• SIC 23.13: Manufacture of hollow glass (15%)</li> <li>• SIC 23.19: Manufacture of other glass (15%)</li> <li>• SIC 47.79/1: Retail sale of antiques and antique books</li> <li>• SIC 95.24: Repair of furniture and home furnishings</li> <li>• SIC 13: Manufacture of textiles (25%)</li> <li>• SIC 14: Manufacture of wearing apparel (20%)</li> <li>• SIC 15: Manufacture of leather and related products (20%)</li> <li>• SIC 74.1: Specialised design activities (25%)</li> <li>• SIC 71.12/1: Engineering design activities for industrial process and production</li> <li>• SIC 74.1: Specialised design activities (75%)</li> <li>• SIC 90.01: Performing arts</li> <li>• SIC 90.02: Support activities to performing arts</li> <li>• SIC 90.04: Operation of arts facilities</li> <li>• SIC 78.10/1: Motion picture, television and other theatrical casting</li> <li>• SIC 59.2: Sound recording and music publishing activities</li> <li>• SIC 18.20/1: Reproduction of sound recording</li> <li>• SIC 32.2: Manufacture of musical instruments</li> <li>• SIC 74.20/1: Portrait photographic activities</li> <li>• SIC 74.20/2: Other specialist photography (not including portrait photography)</li> <li>• SIC 74.20/9: Other photographic activities (not including portrait and other specialist photography and film processing)</li> </ul> <p>n.e.c.</p>

Growth Sector	Definition (SIC 2007)
	<ul style="list-style-type: none"> <li>• SIC 18.20/2: Reproduction of video recording</li> <li>• SIC 59.11/1: Motion picture production activities</li> <li>• SIC 59.11/2: Video production activities</li> <li>• SIC 59.12: Motion picture, video and television programme post-production activities (25%)</li> <li>• SIC 59.13/1: Motion picture distribution activities</li> <li>• SIC 59.13/2: Video distribution activities</li> <li>• SIC 59.14: Motion picture projection activities</li> <li>• SIC 58.21: Publishing of computer games</li> <li>• SIC 62.01/1: Ready-made interactive leisure and entertainment software development</li> <li>• SIC 59.11/3: Television programme production activities</li> <li>• SIC 59.13/3: Television programme distribution activities</li> <li>• SIC 59.12: Motion picture, video and television programme post-production activities (75%)</li> <li>• SIC 60.1: Radio broadcasting</li> <li>• SIC 60.2: Television programming and broadcasting activities</li> <li>• SIC 90.03: Artistic creation (30%)</li> <li>• SIC 58.11: Book publishing</li> <li>• SIC 58.13: Publishing of newspapers</li> <li>• SIC 58.14: Publishing of journals and periodicals</li> <li>• SIC 58.19: Other publishing activities</li> <li>• SIC 18.11: Printing of newspapers</li> <li>• SIC 18.129: Other printing (not labels)</li> <li>• SIC 18.13: Pre press and media services</li> <li>• SIC 63.91: News agency activities</li> <li>• SIC 91.01: Libraries and archive activities</li> <li>• SIC 58.29 Other software publishing</li> <li>• SIC 62.01/2: Business and domestic software development</li> <li>• SIC 62.02: Computer consultancy activities</li> <li>• SIC 85.52: Cultural Education</li> </ul>
<b>Energy (including renewables)</b>	<ul style="list-style-type: none"> <li>• SIC 05: Mining of coal and lignite</li> <li>• SIC 06: Extraction of crude petroleum and natural gas</li> <li>• SIC 09: Mining support service activities</li> <li>• SIC 19: Manufacture of coke and refined petroleum products</li> <li>• SIC 20.14: Manufacture of other organic based chemicals</li> <li>• SIC 35: Electricity, gas, steam and air conditioning supply</li> <li>• SIC 36: Water collection, treatment and supply</li> <li>• SIC 38.22: Treatment and disposal of hazardous waste</li> </ul>

Growth Sector	Definition (SIC 2007)
	<ul style="list-style-type: none"> <li>• SIC 71.12/2 Engineering related scientific and technical consulting activities</li> <li>• SIC 74.90/1 Environmental consulting activities</li> </ul>
<b>Financial and business services</b>	<ul style="list-style-type: none"> <li>• SIC 64.1: Monetary intermediation</li> <li>• SIC 64.3: Trusts, funds and similar financial entities</li> <li>• SIC 64.9: Other financial service activities, except insurance and pension funding</li> <li>• SIC 65: Insurance, reinsurance and pension funding, except compulsory social security</li> <li>• SIC 66: Activities auxiliary to financial services and insurance activities</li> <li>• SIC 69.1: Legal activities</li> <li>• SIC 69.2: Accounting, bookkeeping and auditing activities; tax consultancy</li> <li>• SIC 70.2: Management consultancy activities</li> <li>• SIC 71.129: Other engineering activities (not including engineering design for industrial process and production or engineering related scientific and technical consulting activities)</li> <li>• SIC 73.2: Market research and public opinion polling</li> <li>• SIC 74.3: Translation and interpretation activities</li> <li>• SIC 78.109: Activities of employment placement agencies (other than motion picture, television and other theatrical casting) n.e.c.</li> <li>• SIC 78.3: Other human resources provision</li> <li>• SIC 82.1: Office administrative and support activities</li> <li>• SIC 82.2: Activities of call centres</li> <li>• SIC 82.3: Organisation of conventions and trade shows</li> <li>• SIC 82.91: Activities of collection agencies and credit bureaus</li> <li>• SIC 82.99: Other business support service activities n.e.c.</li> </ul>
<b>Food and drink (including agriculture and fisheries)</b>	<ul style="list-style-type: none"> <li>• SIC 01: Crop and Animal Production, Hunting and Related Service Activities</li> <li>• SIC 03: Fishing and Aquaculture</li> <li>• SIC 10: Manufacture of Food Products</li> <li>• SIC 11: Manufacture of Beverages</li> </ul>
<b>Life sciences</b>	<ul style="list-style-type: none"> <li>• SIC 21: Manufacture of basic pharmaceutical products and pharmaceutical preparations</li> <li>• SIC 26.6: Manufacture of irradiation, electromedical and electrotherapeutic equipment</li> <li>• SIC 32.5: Manufacture of medical and dental instruments and supplies</li> <li>• SIC 72.11: Research and experimental development on biotechnology</li> <li>• SIC 72.19: Other research and experimental development on natural sciences and engineering</li> </ul>
<b>Sustainable tourism</b>	<ul style="list-style-type: none"> <li>• SIC 55.1: Hotels and similar accommodation</li> <li>• SIC 55.2: Holiday and other short-stay accommodation</li> <li>• SIC 55.3: Camping grounds, recreational vehicle parks and trailer parks</li> <li>• SIC 56.1: Restaurants and mobile food service activities</li> <li>• SIC 56.3: Beverage serving activities</li> </ul>

Growth Sector	Definition (SIC 2007)
	<ul style="list-style-type: none"> <li>• SIC 79.12: Tour operator activities</li> <li>• SIC 79.9: Other reservation service and related activities</li> <li>• SIC 91.02: Museum activities</li> <li>• SIC 91.03: Operation of historical sites and buildings and similar visitor attractions</li> <li>• SIC 91.04: Botanical and zoological gardens and nature reserve activities</li> <li>• SIC 93.11: Operation of sports facilities</li> <li>• SIC 93.199: Other sports activities (not including activities of racehorse owners) nec</li> <li>• SIC 93.21: Activities of amusement parks and theme parks</li> <li>• SIC 93.29: Other amusement and recreation activities</li> </ul>
<b>Universities</b>	<ul style="list-style-type: none"> <li>• SIC 85.42: Tertiary education</li> </ul>

*Source:* Scottish Government Growth Sectors Database (except Universities)

*Note:* To analyse APS data, it was necessary to exclude those sub-sectors that are only partially in creative industries (e.g. SIC 16.29: Manufacture of other wood products).



**Figure A1.2: Definitions of Other Growth Sectors**

Growth Sector	Definition (SIC 2007)
<b>Chemical sciences</b>	<ul style="list-style-type: none"> <li>• SIC 19: Manufacture of coke and refined petroleum products</li> <li>• SIC 20: Manufacture of chemicals and chemical products</li> <li>• SIC 21: Manufacture of basic pharmaceutical products and pharmaceutical preparations</li> </ul>
<b>Construction</b>	<ul style="list-style-type: none"> <li>• SIC 41: Construction of buildings</li> <li>• SIC 42: Civil engineering</li> <li>• SIC 43: Specialised construction activities</li> </ul>
<b>Engineering</b>	<ul style="list-style-type: none"> <li>• SIC 24: Manufacture of Basic Metals</li> <li>• SIC 25: Manufacture of Fabricated and Metal Products, except mach/equip</li> <li>• SIC 26: Manufacture of Computer, Electronic and Optical Products</li> <li>• SIC 27: Manufacture of Electrical Equipment</li> <li>• SIC 28: Manufacture of Machinery and Equipment (not elsewhere classified)</li> <li>• SIC 29: Manufacture of Motor Vehicles, Trailers and Semi-Trailers</li> <li>• SIC 30: Manufacture of Other Transport Equipment</li> <li>• SIC 33: Repair and Installation of Machinery and Equipment</li> <li>• SIC 71: Architectural and Engineering Activities; Technical Testing and Analysis</li> </ul>
<b>ICT and digital technologies</b>	<ul style="list-style-type: none"> <li>• SIC 62: Computer Programming, Consultancy and Related Activities</li> </ul>

*Source:* Scottish Enterprise Sector Team Definitions

*Note:* Scottish Enterprise has a 'Technology and Advanced Engineering' sector team. The SIC codes from this have been used to determine the definitions for both 'engineering' and 'ICT and digital technologies' growth sectors. As such, if the data for these two growth sectors were combined, they would provide the figures for 'Technology and Advanced Engineering'. Some digital technologies (SIC 58.21: Publishing of computer games; SIC 58.29 Other software publishing; SIC 62.01/1: Ready-made interactive leisure and entertainment software development; SIC 62.01/2: Business and domestic software development; and SIC 62.02: Computer consultancy activities) are included in the definition of Creative Industries.

## APPENDIX 2: ALLOCATION OF MODERN APPRENTICESHIP FRAMEWORKS AND COLLEGE SUBJECT AREAS TO GROWTH SECTORS

In order to analyse the Modern Apprenticeship (MA) starts and college enrolment data by protected characteristic, MA frameworks and college subject areas had to be allocated on a sectoral basis. This Appendix sets out the MA frameworks and college subject areas that were considered to be relevant to each growth sector.

**Figure A2.1: Modern Apprenticeship Frameworks Relevant to Growth Sectors**

Growth sector	Modern Apprenticeship Frameworks
Creative industries (including digital)	<ul style="list-style-type: none"> <li>• Creative</li> <li>• Creative and cultural skills</li> <li>• Creative and digital media</li> <li>• Jewellery, silversmithing and allied trades</li> </ul>
Energy (including renewables)	<ul style="list-style-type: none"> <li>• Extractive and mineral processing</li> <li>• Gas industry</li> <li>• Oil and gas extraction</li> <li>• Power distribution</li> <li>• Electricity industry</li> <li>• Wind turbine operations and maintenance</li> </ul>
Financial and business services	<ul style="list-style-type: none"> <li>• Accounting</li> <li>• Contact centres</li> <li>• Providing financial services</li> </ul>
Food and drink (including agriculture and fisheries)	<ul style="list-style-type: none"> <li>• Agricultural crops and livestock</li> <li>• Agriculture</li> <li>• Aquaculture</li> <li>• Bakery</li> <li>• Food and drink manufacturing operations</li> <li>• Food and drink operations</li> <li>• Food manufacture</li> <li>• Land-based service engineering</li> <li>• Land-based engineering</li> <li>• Meat and poultry processing</li> <li>• Meat industry</li> <li>• Sea fishing (catching)</li> </ul>
Life sciences	<ul style="list-style-type: none"> <li>• Biotechnology</li> </ul>

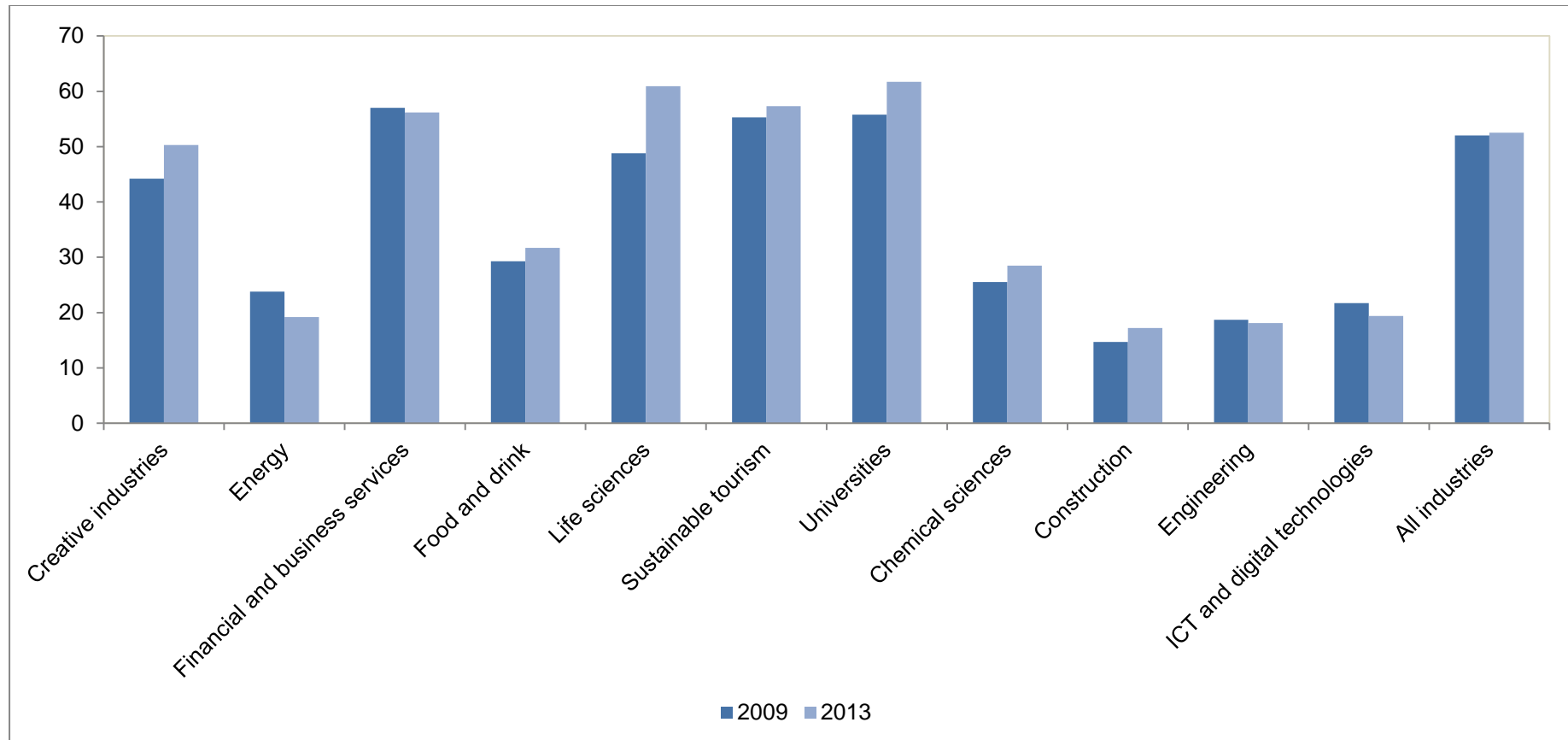
Growth sector	Modern Apprenticeship Frameworks
	<ul style="list-style-type: none"> <li>• Life sciences</li> </ul>
<b>Sustainable tourism</b>	<ul style="list-style-type: none"> <li>• Game and wildlife management</li> <li>• Hospitality</li> <li>• Hospitality management skills technical apprenticeship</li> <li>• Travel services</li> </ul>
<b>Universities</b>	<ul style="list-style-type: none"> <li>• None</li> </ul>
<b>Chemical sciences</b>	<ul style="list-style-type: none"> <li>• Chemical manufacturing and petroleum industry</li> <li>• Polymer processing</li> </ul>
<b>Construction</b>	<ul style="list-style-type: none"> <li>• Construction</li> <li>• Construction (civil engineering and specialist sector)</li> <li>• Construction (craft operations)</li> <li>• Construction (technical operations)</li> <li>• Construction: building</li> <li>• Construction: civil engineering</li> <li>• Construction: professional apprenticeship</li> <li>• Construction: specialist</li> <li>• Construction: technical</li> <li>• Construction: technical apprenticeship</li> <li>• Electrical installation</li> <li>• Electrotechnical</li> <li>• Electrotechnical services</li> <li>• Heating, ventilation, air conditioning and refrigeration</li> <li>• Plumbing</li> </ul>
<b>Engineering</b>	<ul style="list-style-type: none"> <li>• Engineering</li> <li>• Engineering construction</li> </ul>
<b>ICT and digital technologies</b>	<ul style="list-style-type: none"> <li>• ICT professional</li> <li>• IT and telecommunications</li> <li>• IT users</li> </ul>

**Figure A2.2: College Subject Areas Frameworks Relevant to Growth Sectors**

Growth sector	College Subject Areas
<b>Creative industries (including digital)</b>	<ul style="list-style-type: none"> <li>• Culture/Gender/Folklore</li> <li>• Literature</li> <li>• Cultural/Area/Social/Diaspora Studies</li> <li>• Art Studies/Fine Arts</li> <li>• Art Techniques/Practice</li> <li>• Design (non-industrial)</li> <li>• Collecting/Antiques</li> <li>• Crafts: Leisure/General</li> <li>• Decorative Leisure Crafts</li> <li>• Decorative Metal Crafts/Jewellery</li> <li>• Fashion/Textiles/Clothing (craft)</li> <li>• Fabric Crafts/Soft Furnishings</li> <li>• Wood Cane and Furniture Crafts</li> <li>• Glass/Ceramics/Stone Crafts</li> <li>• Communication/Media (general)</li> <li>• Writing (authorship)</li> <li>• Journalism</li> <li>• Photography</li> <li>• Film/Video Production</li> <li>• Audio and Visual Media</li> <li>• Print and Publishing</li> <li>• Performing Arts (general)</li> <li>• Dance</li> <li>• Theatre and Dramatic Arts</li> <li>• Theatre Production</li> <li>• Music History/Theory</li> <li>• Music of Specific Kinds/Cultures</li> <li>• Music Performance</li> <li>• Musical Instrument Technology</li> <li>• Arts/Culture/Heritage Administration</li> <li>• Woodworking/Furniture Manufacture</li> </ul>
<b>Energy (including renewables)</b>	<ul style="list-style-type: none"> <li>• Energy Economics/Management/Conservation</li> <li>• Oil and Gas Operations</li> </ul>
<b>Financial and business services</b>	<ul style="list-style-type: none"> <li>• Financial Management/Accounting</li> </ul>

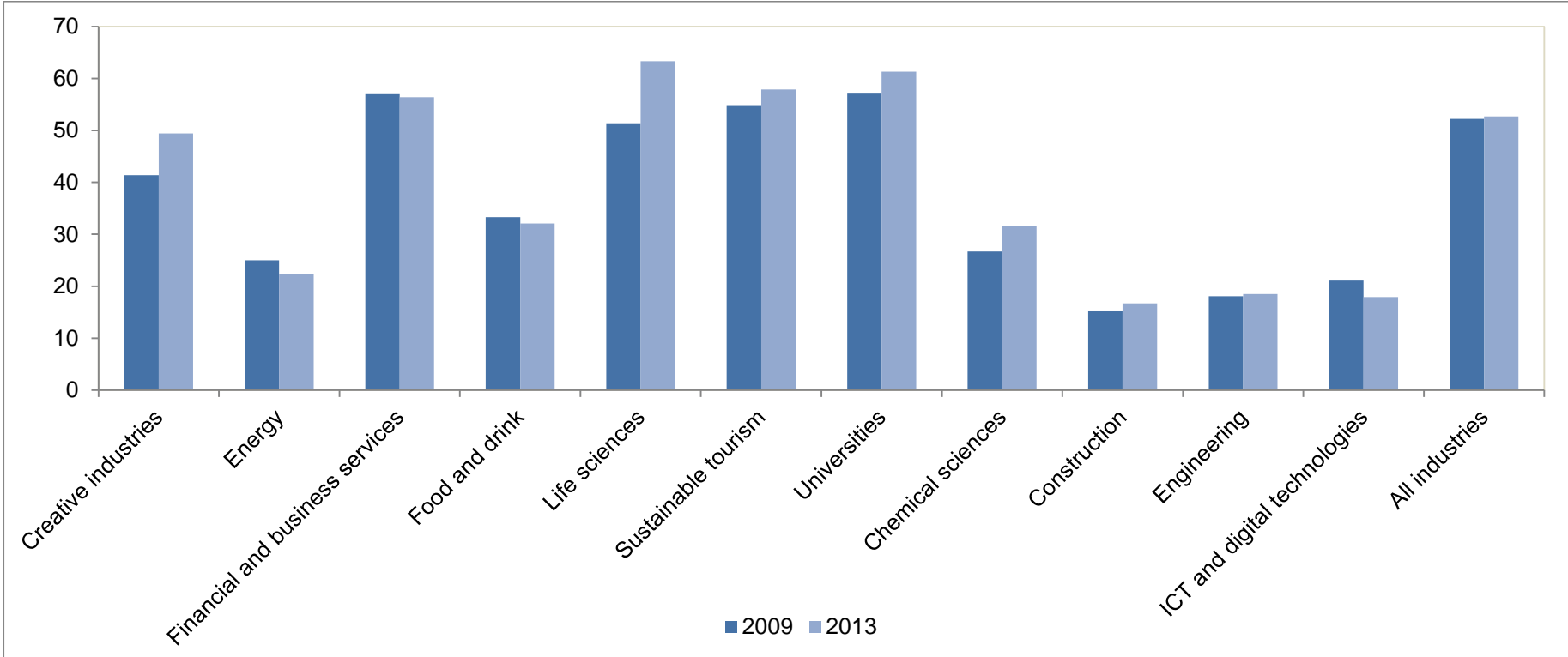
Growth sector	College Subject Areas
	<ul style="list-style-type: none"> <li>• Financial Services</li> <li>• Law</li> </ul>
<b>Food and drink (including agriculture and fisheries)</b>	<ul style="list-style-type: none"> <li>• Baking/Dairy/Food and Drink Processing</li> <li>• Cookery</li> <li>• Home Economics</li> <li>• Agriculture/Horticulture (general)</li> <li>• Agricultural Sciences</li> <li>• Crop Protection/Fertilisers/Byproducts</li> <li>• Crop Production</li> <li>• Animal Husbandry</li> <li>• Fish Production/Fisheries</li> <li>• Agricultural Engineering/Farm Machinery</li> <li>• Agricultural/Horticultural Maintenance</li> <li>• Rural/Agricultural Business Organisation</li> <li>• Food/Drink/Tobacco (industrial)</li> <li>• Food Sciences/Technology</li> </ul>
<b>Life sciences</b>	<ul style="list-style-type: none"> <li>• Medical Sciences</li> <li>• Medical Technology/Pharmacology</li> <li>• Life Sciences</li> </ul>
<b>Sustainable tourism</b>	<ul style="list-style-type: none"> <li>• Country/Animal Sports</li> <li>• Hotel/Catering (general)</li> <li>• Food/Drink Services</li> <li>• Catering Services</li> <li>• Hospitality Services</li> <li>• Tourism/Travel</li> <li>• Leisure/Sports Facilities Work</li> <li>• Country leisure Facilities Works</li> </ul>
<b>Universities</b>	<ul style="list-style-type: none"> <li>• None</li> </ul>
<b>Chemical sciences</b>	<ul style="list-style-type: none"> <li>• Chemistry</li> <li>• Chemical Products</li> <li>• Chemicals/Materials Engineering</li> </ul>
<b>Construction</b>	<ul style="list-style-type: none"> <li>• Built Environment (general)</li> <li>• Property: Surveying/Planning/Development</li> <li>• Building Design/Architecture</li> <li>• Construction (general)</li> </ul>

Growth sector	College Subject Areas
	<ul style="list-style-type: none"> <li>• Construction Management</li> <li>• Building/Construction Operations</li> <li>• Building Services</li> <li>• Interior Design/Fitting/Decoration</li> <li>• Construction Site Work</li> <li>• Civil Engineering</li> <li>• Structural Engineering</li> </ul>
<b>Engineering</b>	<ul style="list-style-type: none"> <li>• Engineering Services</li> <li>• Instrument Making/Repair</li> <li>• Testing Measurement and Inspection</li> <li>• Engineering/Technology (general)</li> <li>• Metals Working/Finishing</li> <li>• Welding/Joining</li> <li>• Tools/Machining</li> <li>• Mechanical Engineering</li> <li>• Electrical Engineering</li> <li>• Power/Energy Engineering</li> <li>• Electronic Engineering</li> <li>• Aerospace/Defence Engineering</li> <li>• Ship and Boat Building/Marine/Offshore Engineering</li> </ul>
<b>ICT and digital technologies</b>	<ul style="list-style-type: none"> <li>• Computer Technology</li> <li>• IT: Computer Science/Programming/System</li> <li>• IT: Computer Use</li> <li>• Using Software and Operating Systems</li> <li>• Text/Graphics/Multimedia Presentation Software</li> <li>• Software for Specific Applications/Industries</li> </ul>

**APPENDIX 3: KEY INDICATOR CHARTS**
**Figure A3.1: Female Employees as % of Total Employees in Growth Sectors, 2009 and 2013, Scotland**


Source: Annual Population Survey

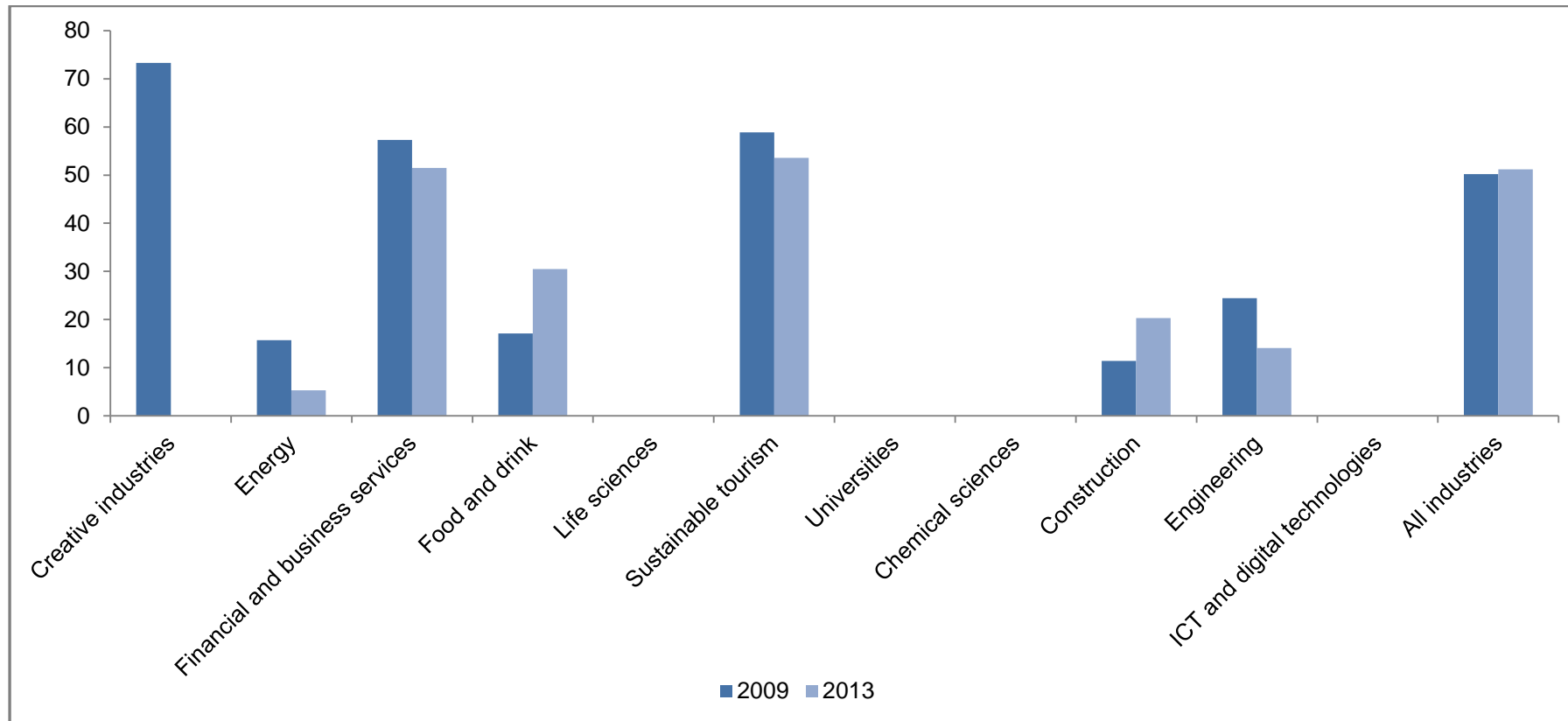
Figure A3.2: Female Employees as % of Total Employees in Growth Sectors, 2009 and 2013, Scottish Enterprise Area



Source: Annual Population Survey



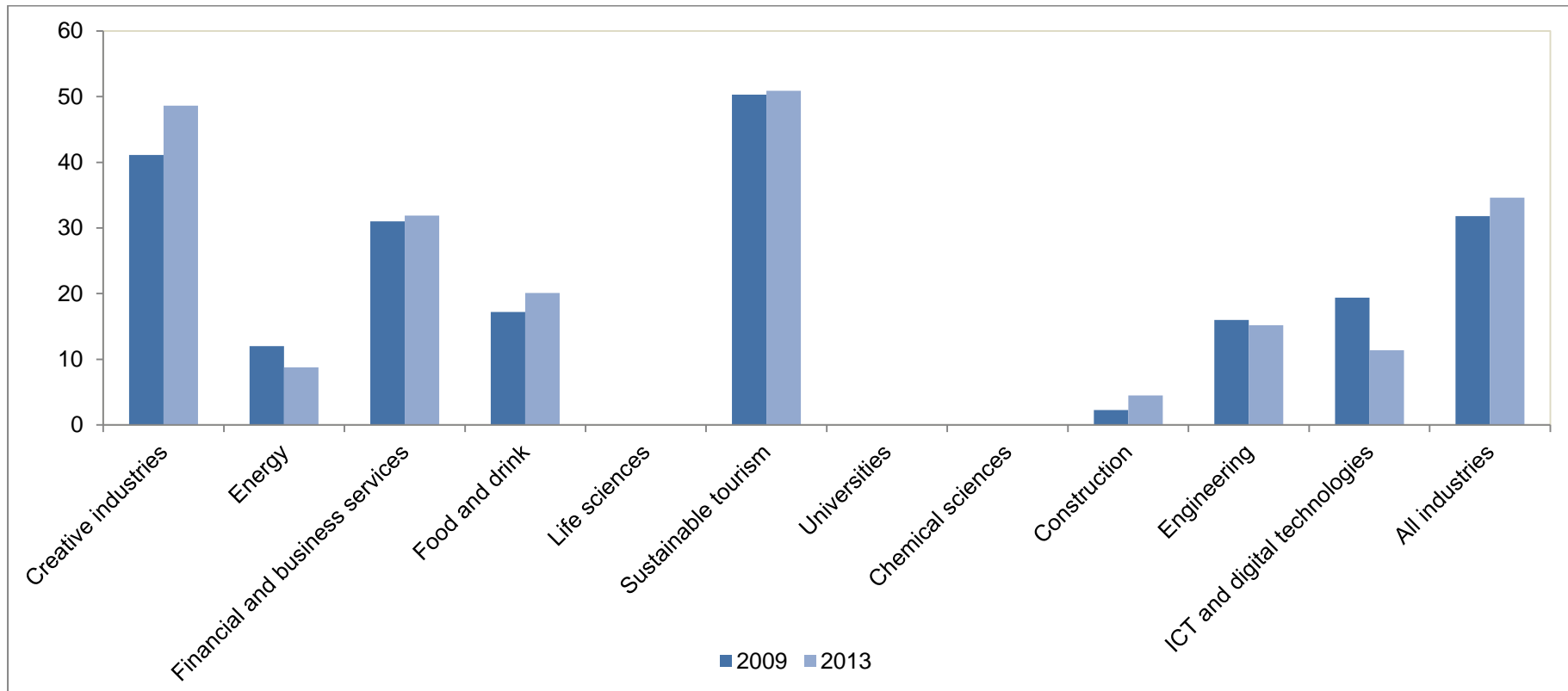
**Figure A3.3: Female Employees as % of Total Employees in Growth Sectors, 2009 and 2013, Highlands and Islands Enterprise Area**



Source: Annual Population Survey

Note: Data is not available for creative industries (2013), life sciences, universities, chemical sciences and ICT and digital technologies (as fewer than 30 cases).

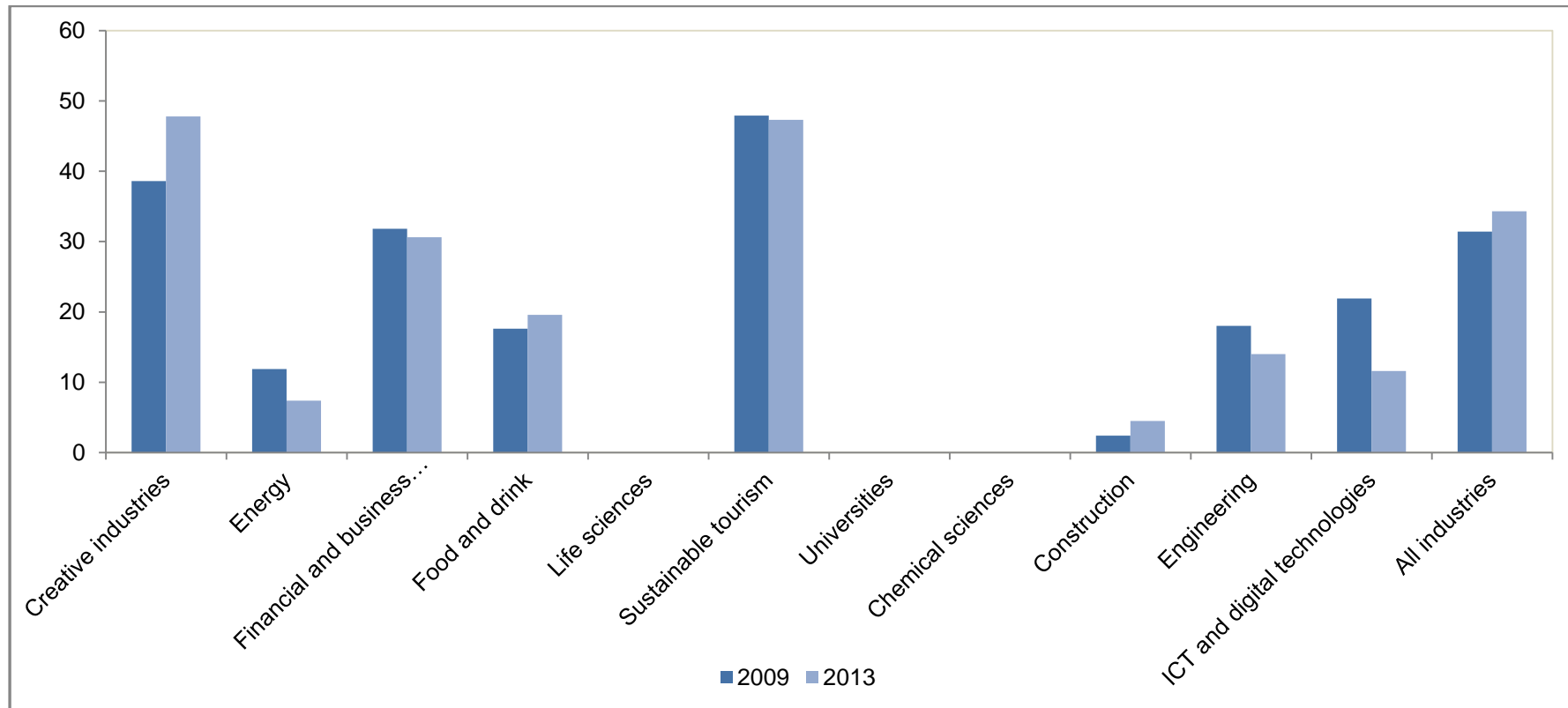
**Figure A3.4: Female Self-employment as % of Total Self-employment in Growth Sectors, 2009 and 2013, Scotland**



Source: Annual Population Survey

Note: Data is not available for life sciences, universities and chemical sciences (as fewer than 30 cases).

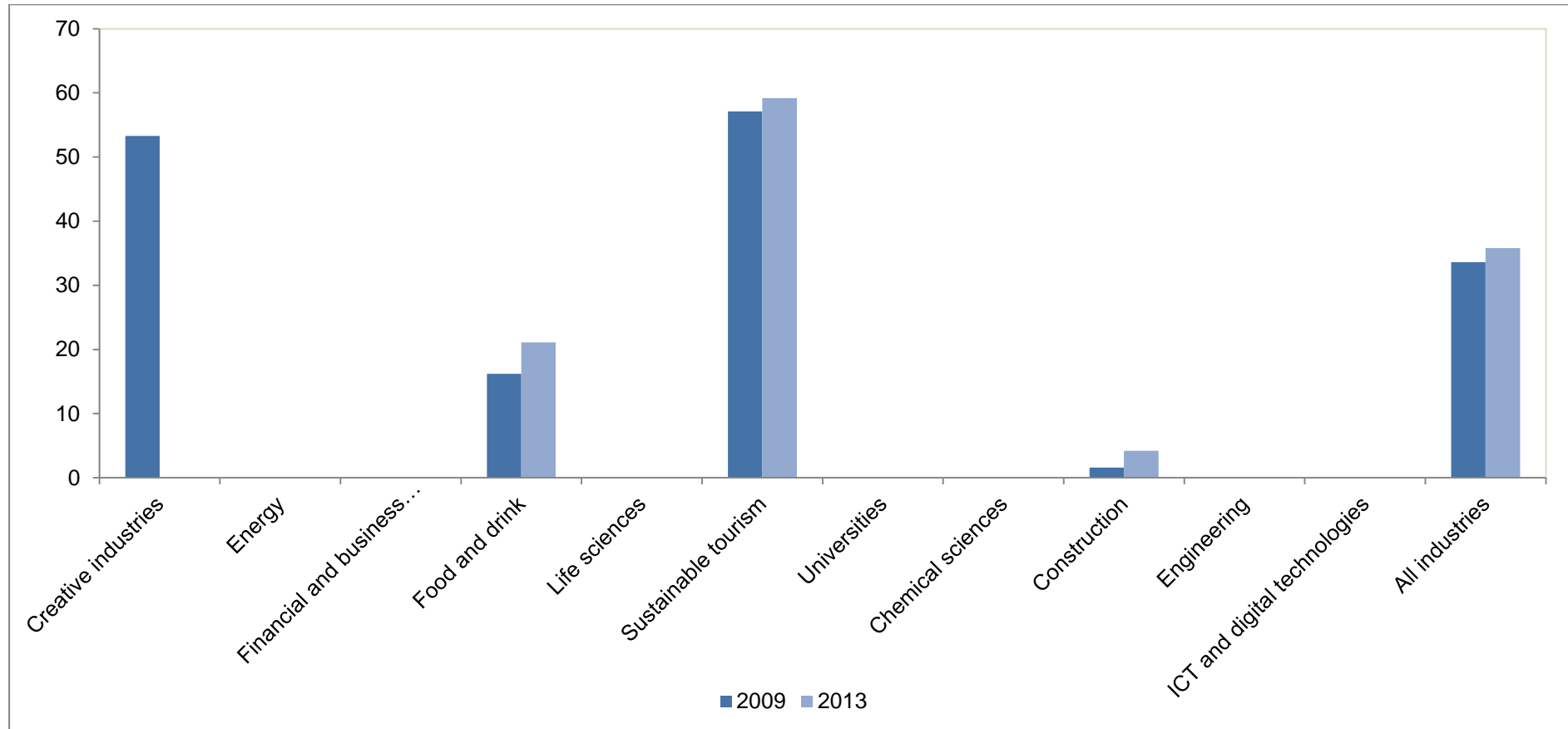
**Figure A3.5: Female Self-employment as % of Total Self-employment in Growth Sectors, 2009 and 2013, Scottish Enterprise Area**



Source: Annual Population Survey

Note: Data is not available for life sciences, universities and chemical sciences (as fewer than 30 cases).

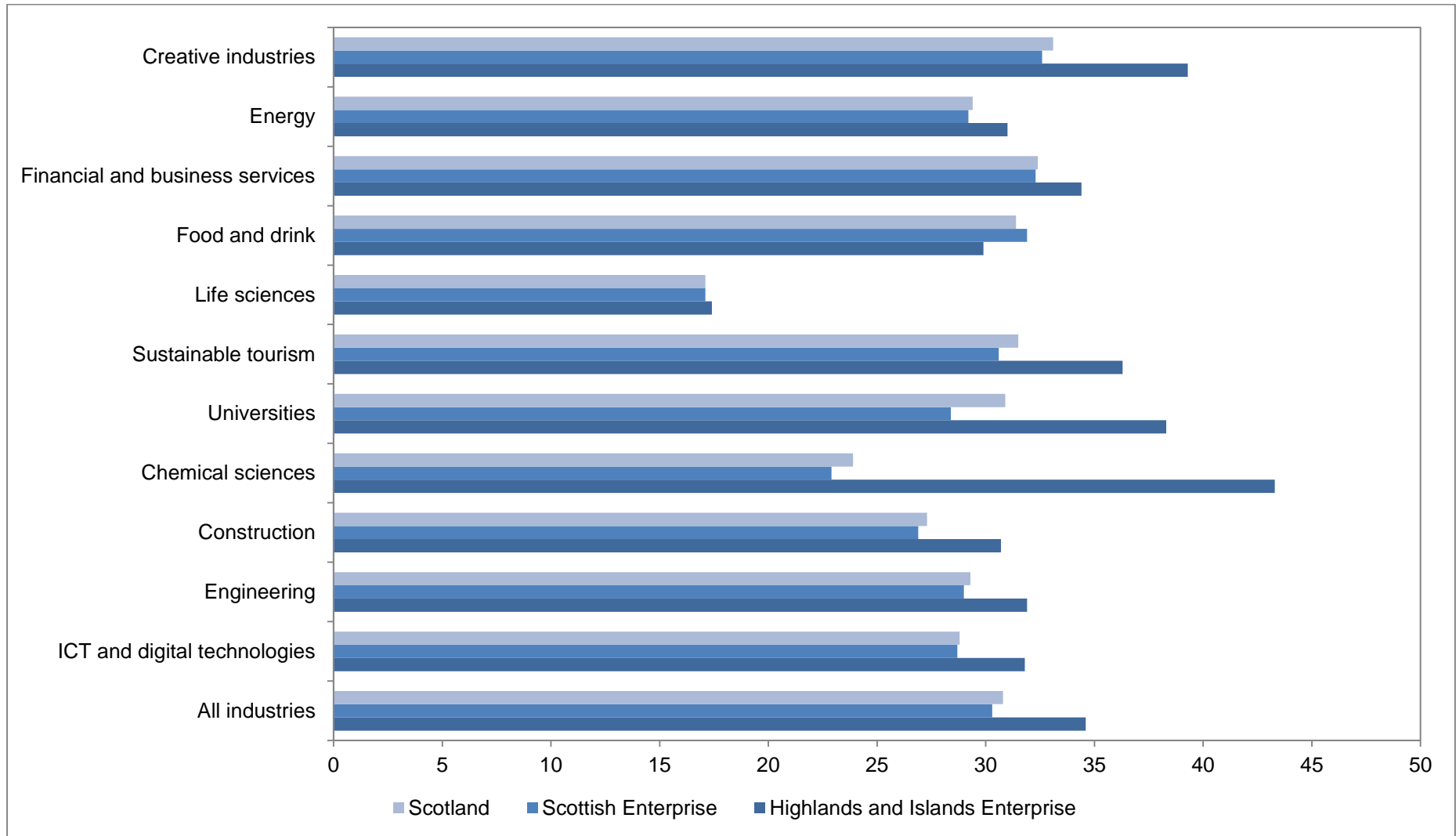
**Figure A3.6: Female Self-employment as % of Total Self-employment in Growth Sectors, 2009 and 2013, Highlands and Islands Enterprise Area**



Source: Annual Population Survey

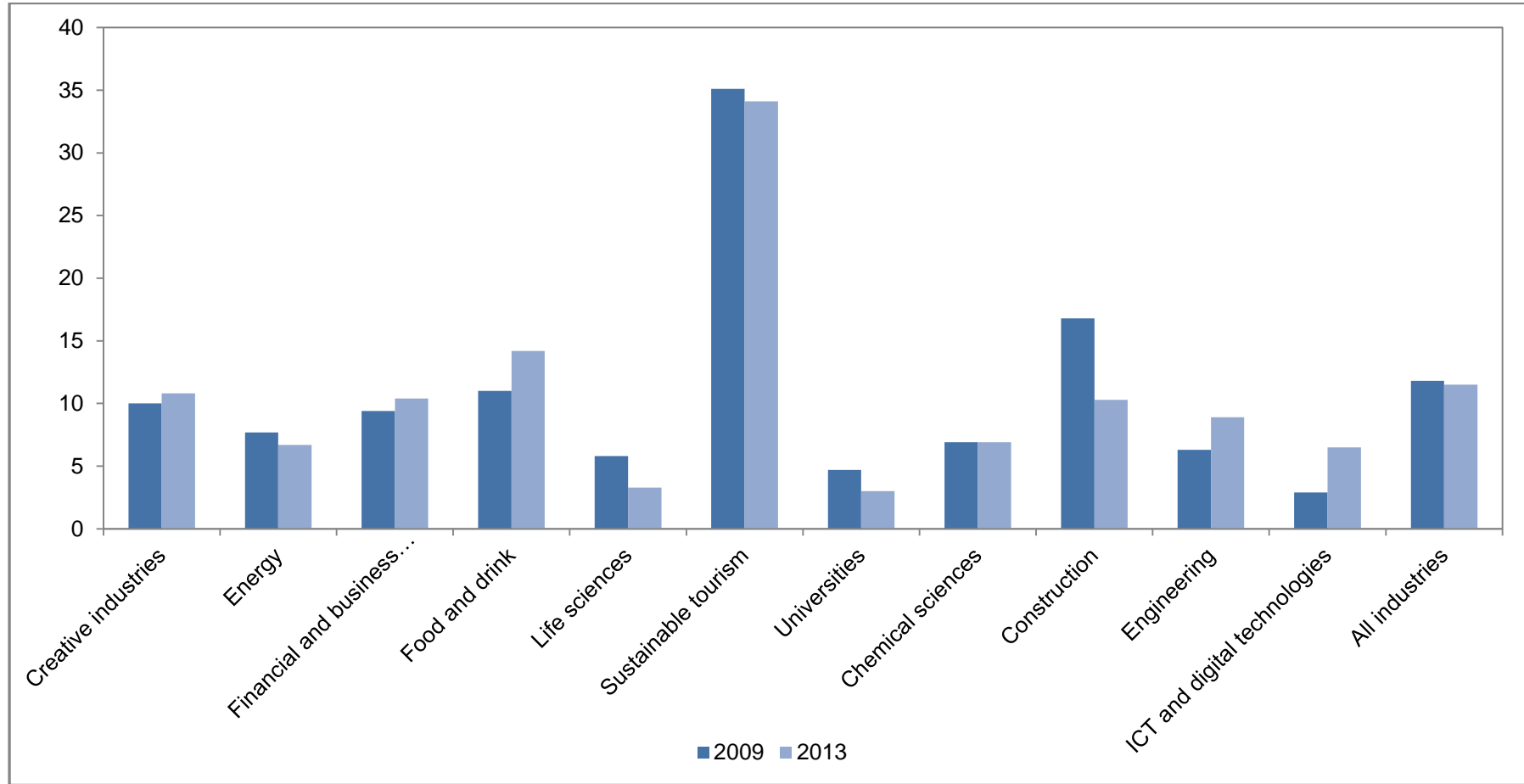
Note: Data is not available for creative industries (2013), energy, financial and business services, life sciences, universities, chemical sciences, engineering or ICT and digital technologies (as fewer than 30 cases).

**Figure A3.7: Female Directors as % of All Directors, by Growth Sectors, 2014**



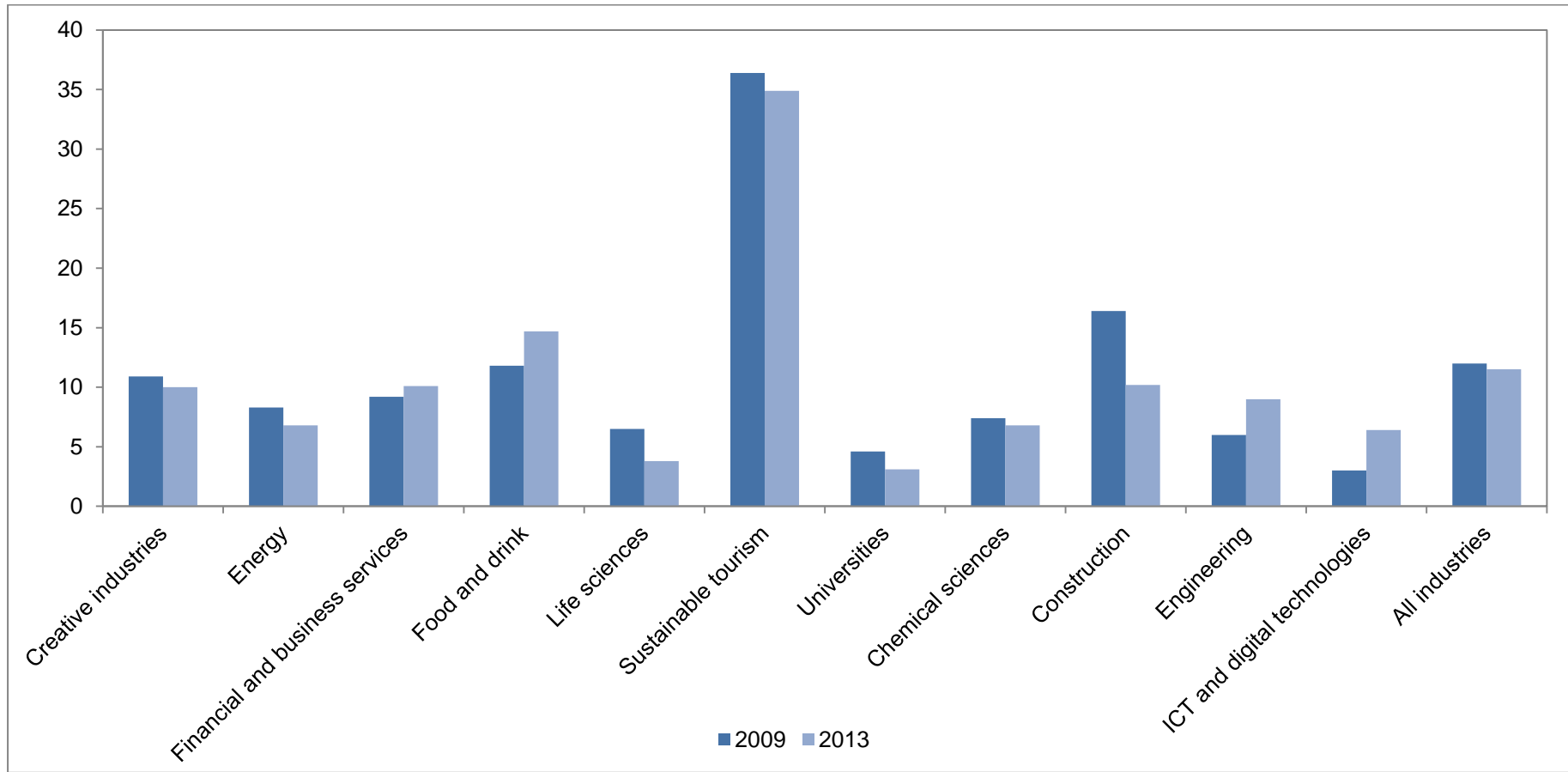
Source: Financial Analysis Made Easy (FAME) database

**Figure A3.8: Young People as % of Total Employees in Growth Sectors, 2009 and 2013, Scotland**



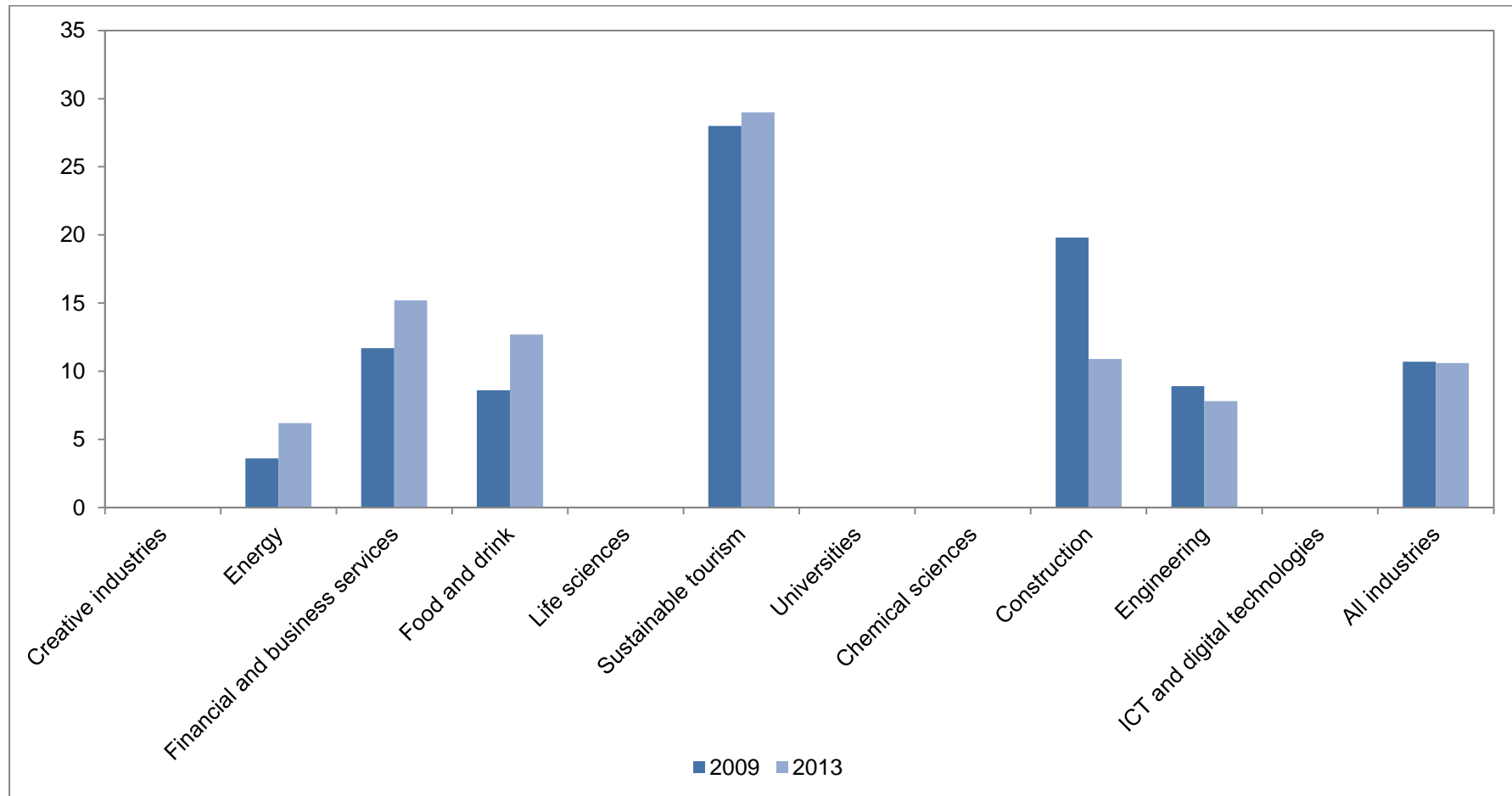
Source: Annual Population Survey

**Figure A3.9: Young People as % of Total Employees in Growth Sectors, 2009 and 2013, Scottish Enterprise Area**



Source: Annual Population Survey

**Figure A3.10: Young People as % of Total Employees in Growth Sectors, 2009 and 2013, Highlands and Islands Enterprise Area**

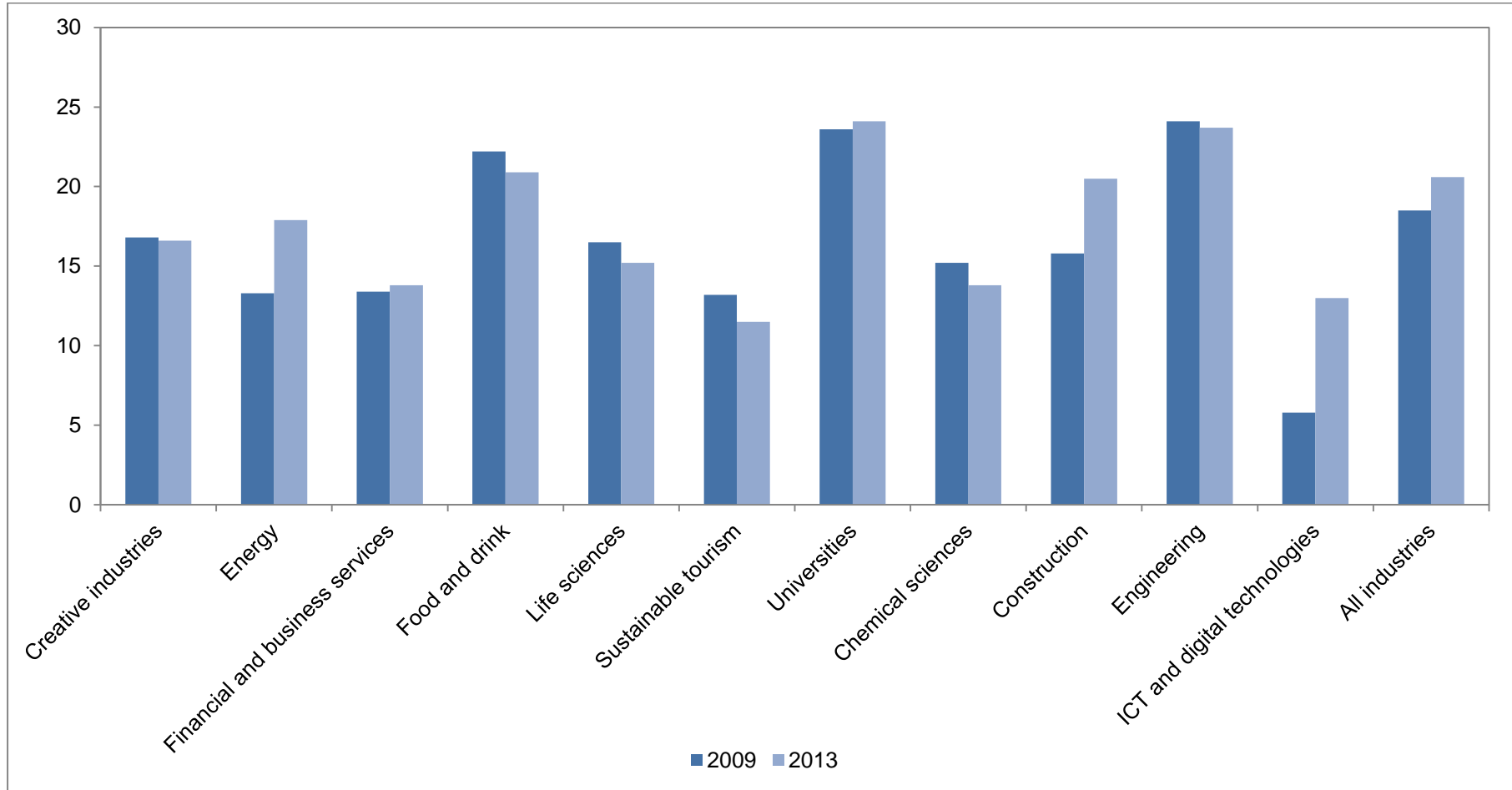


Source: Annual Population Survey

Note: Data is not available for creative industries, life sciences, universities, chemical sciences and ICT and digital technologies (as fewer than 30 cases).

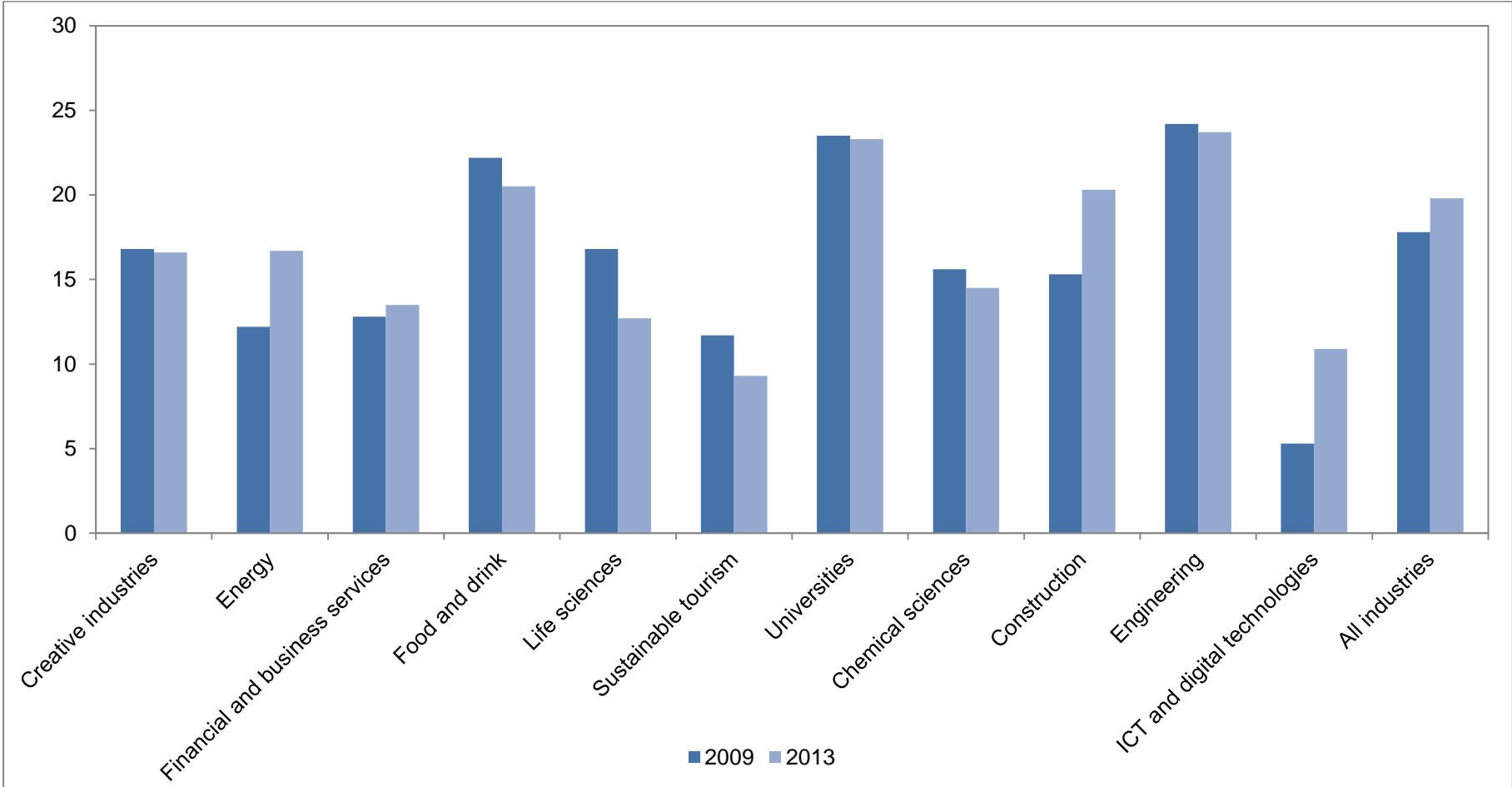


Figure A3.11: Older People as % of Total Employees in Growth Sectors, 2009 and 2013, Scotland



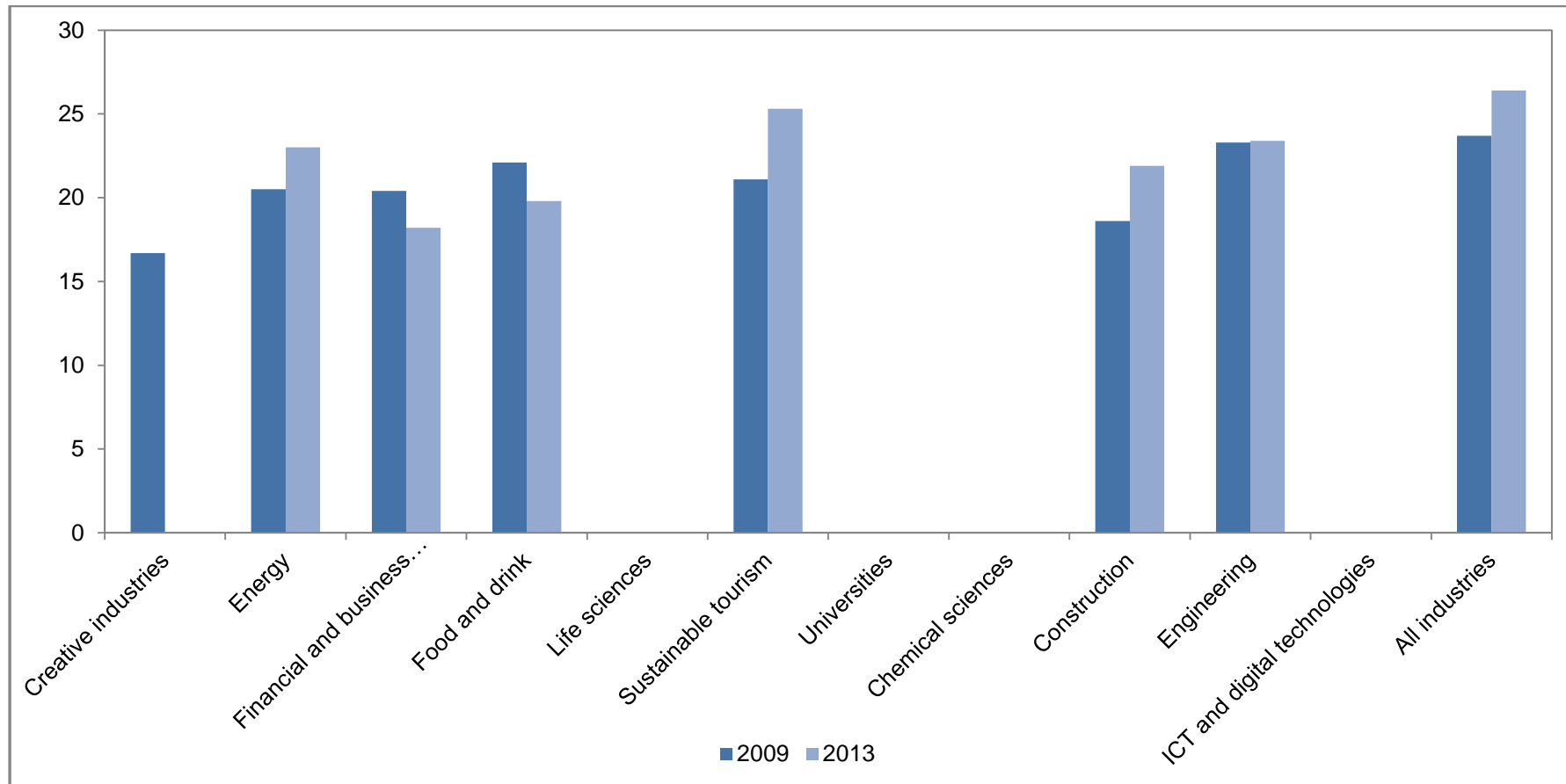
Source: Annual Population Survey

Figure A3.12: Older People as % of Total Employees in Growth Sectors, 2009 and 2013, Scottish Enterprise Area



Source: Annual Population Survey

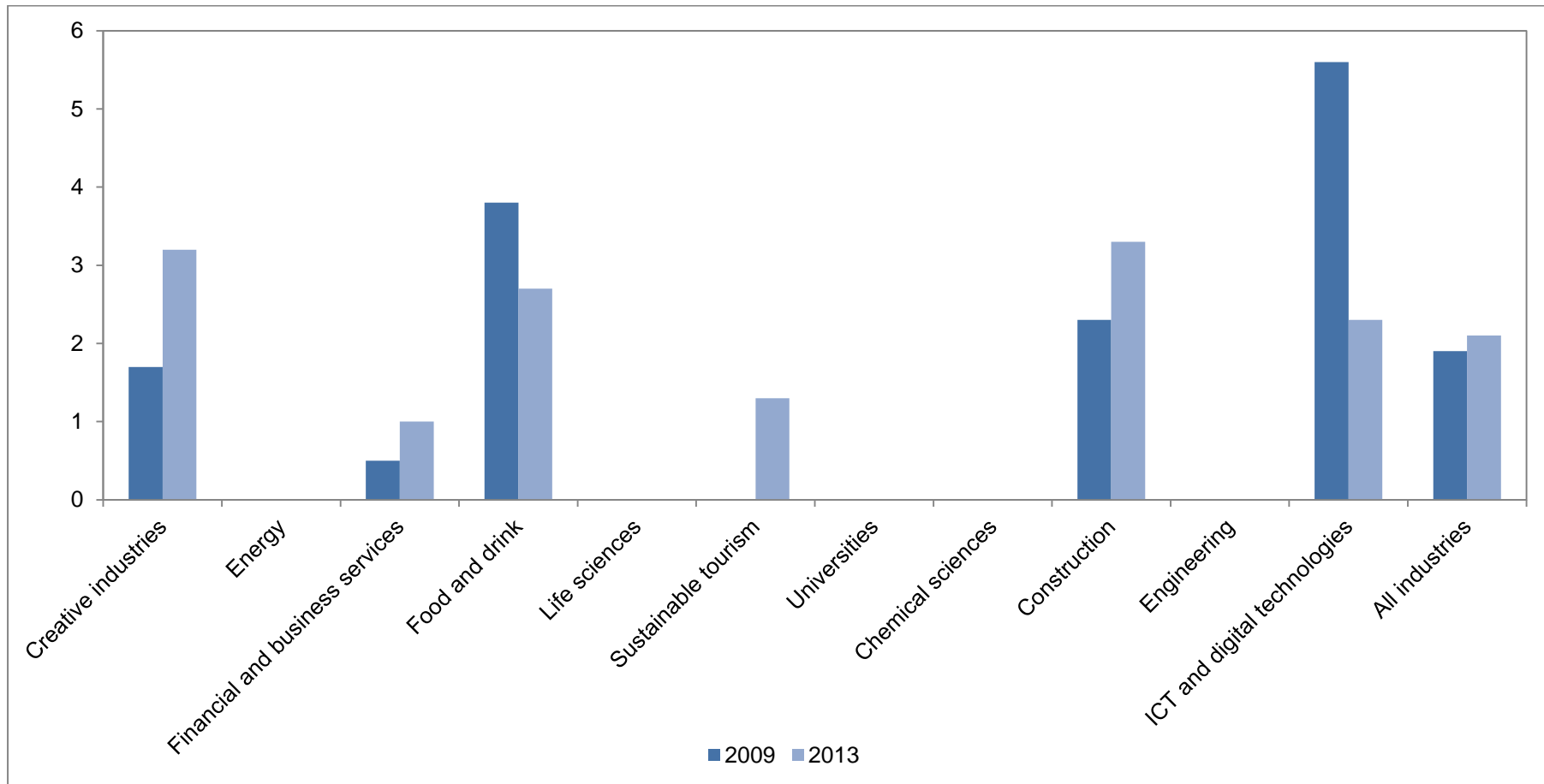
**Figure A3.13: Older People as % of Total Employees in Growth Sectors, 2009 and 2013, Highlands and Islands Enterprise Area**



Source: Annual Population Survey

Note: Data is not available for creative industries (2013), life sciences, universities, chemical sciences and ICT and digital technologies (as fewer than 30 cases).

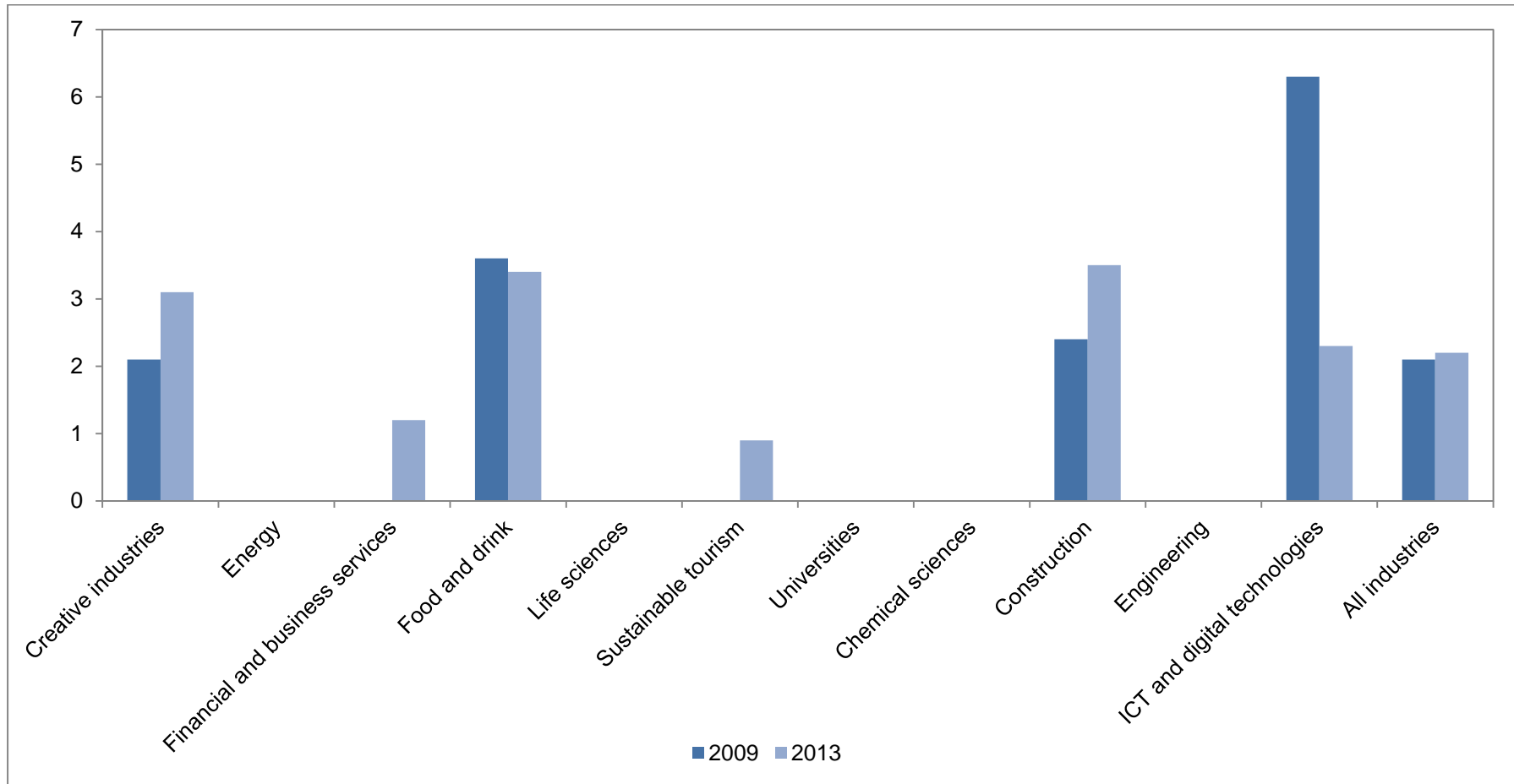
**Figure A3.14: Young People as % of Total Self-employment in Growth Sectors, 2009 and 2013, Scotland**



Source: Annual Population Survey

Note: Data is not available for energy, life sciences, universities, chemical sciences and engineering (as fewer than 30 cases).

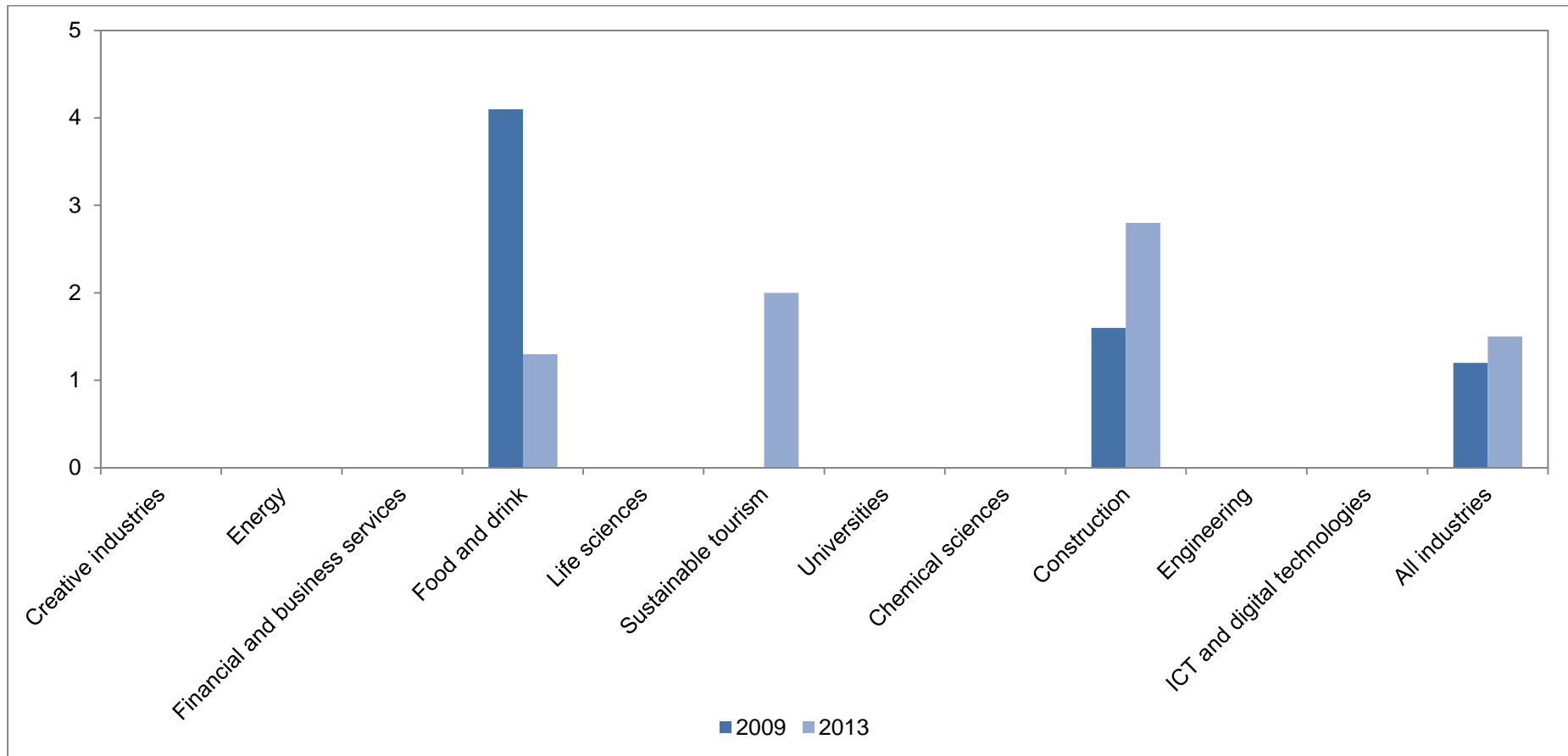
**Figure A3.15: Young People as % of Total Self-employment in Growth Sectors, 2009 and 2013, Scottish Enterprise Area**



Source: Annual Population Survey

Note: Data is not available for energy, financial and business services (2009), life sciences, sustainable tourism (2009), universities, chemical sciences and engineering (as fewer than 30 cases).

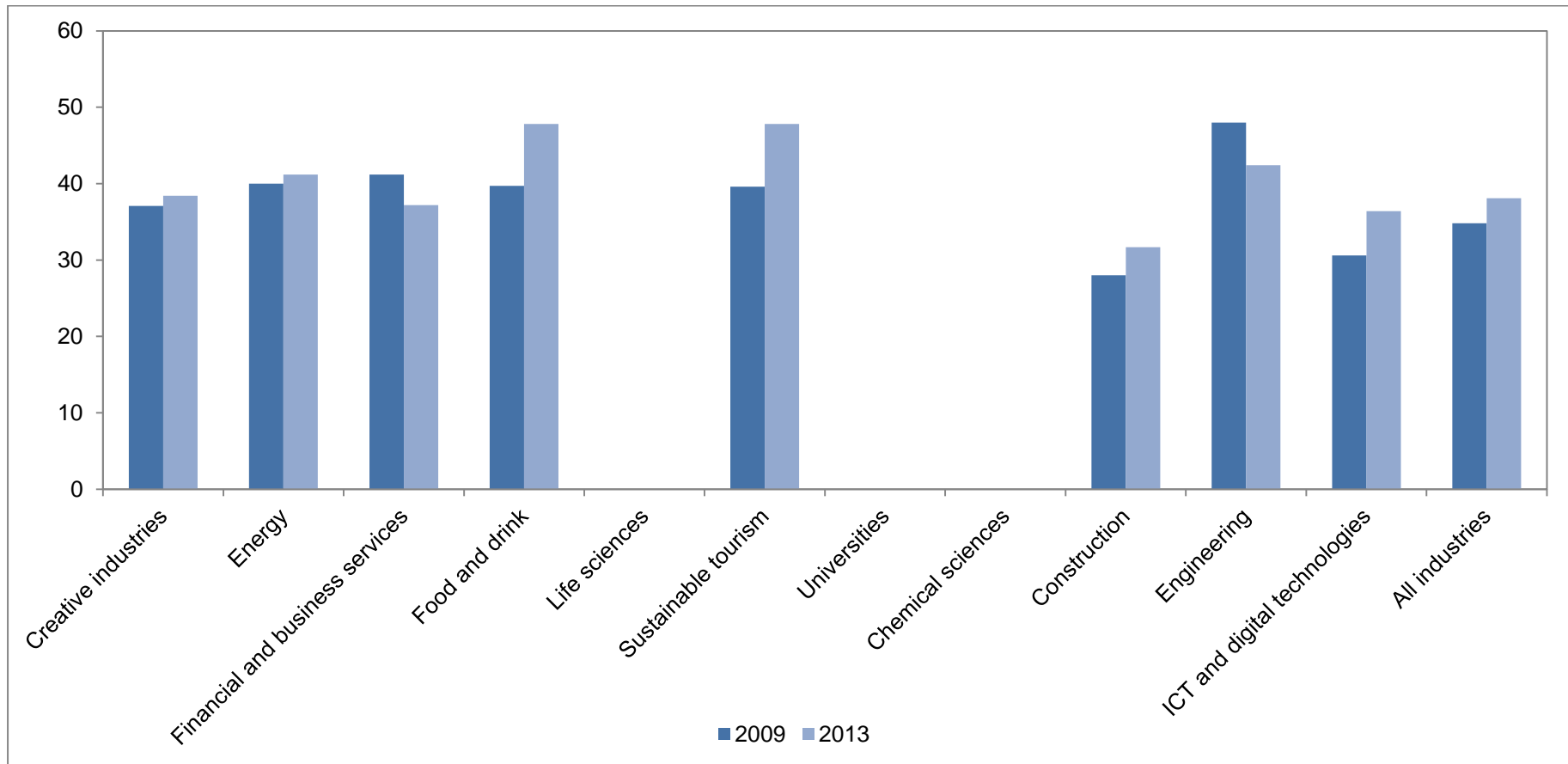
**Figure A3.16: Young People as % of Total Self-employment in Growth Sectors, 2009 and 2013, Highlands and Islands Enterprise Area**



Source: Annual Population Survey

Note: Data is not available for creative industries, energy, financial and business services, life sciences, sustainable tourism (2009), universities, chemical sciences, engineering and ICT and digital technologies (as fewer than 30 cases).

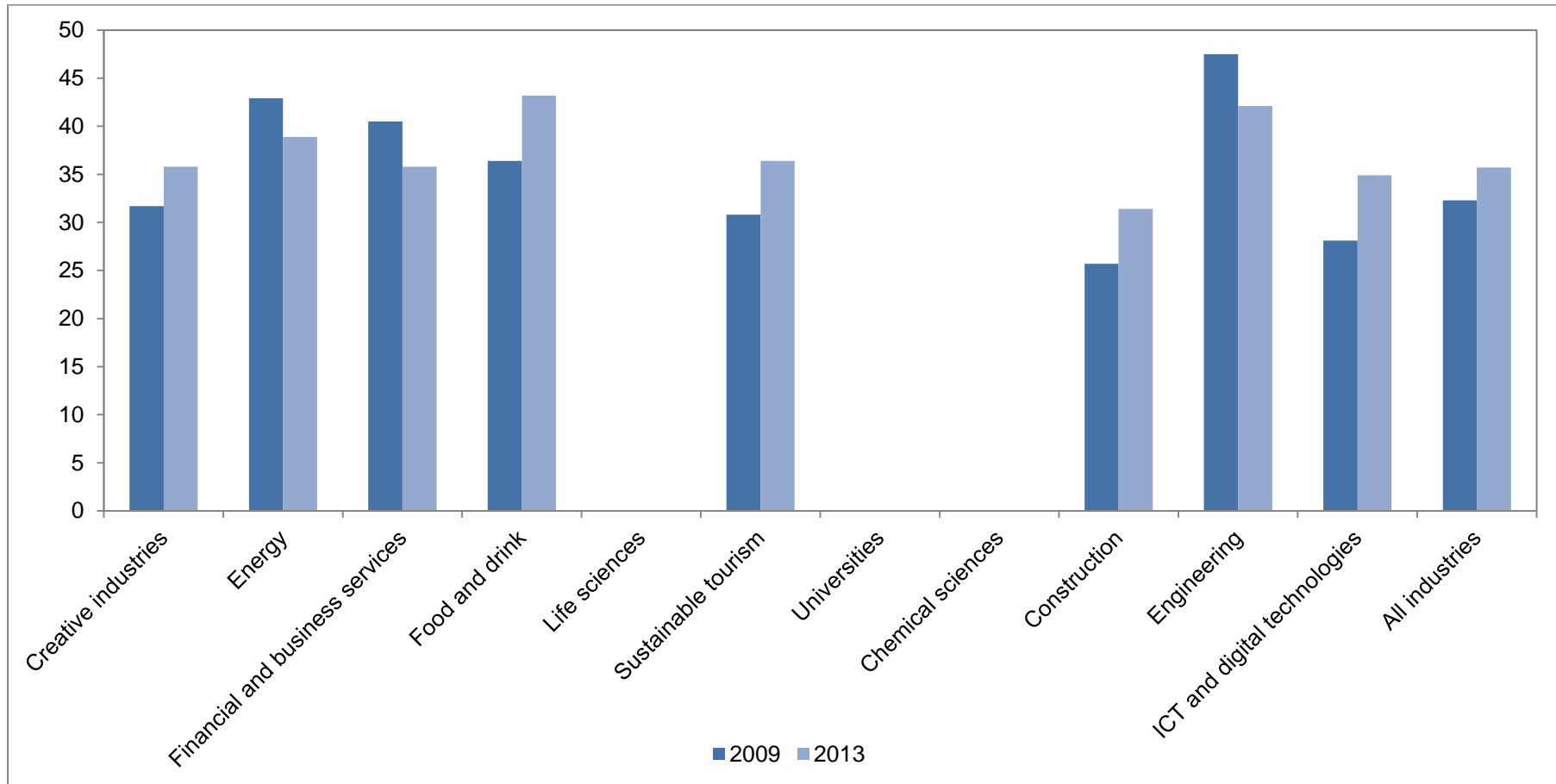
**Figure A3.17: Older People as % of Total Self-employment in Growth Sectors, 2009 and 2013, Scotland**



Source: Annual Population Survey

Note: Data is not available for life sciences, universities and chemical sciences (as fewer than 30 cases).

**Figure A3.18: Older People as % of Total Self-employment in Growth Sectors, 2009 and 2013, Scottish Enterprise Area**

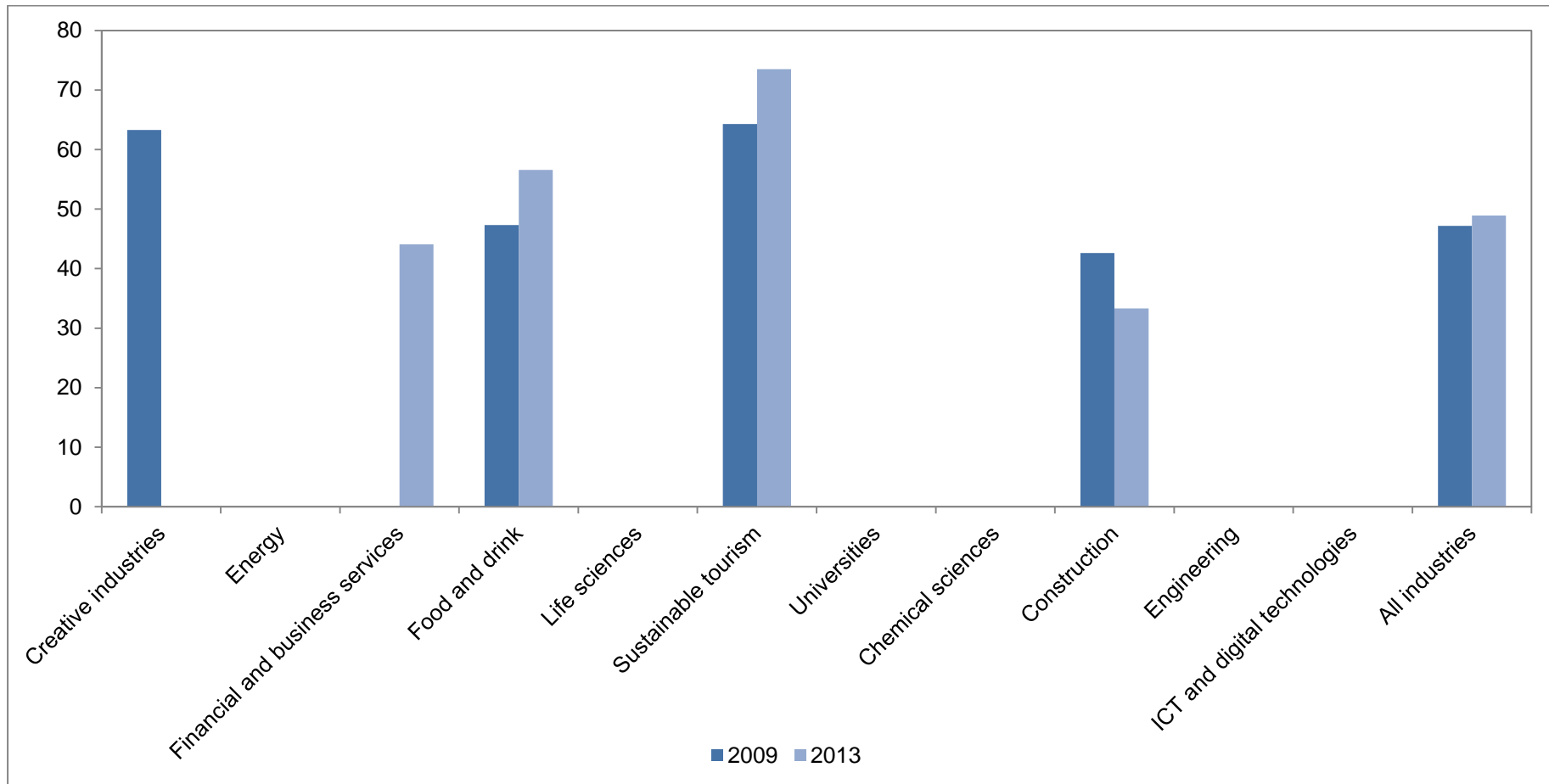


Source: Annual Population Survey

Note: Data is not available for life sciences, universities and chemical sciences (as fewer than 30 cases).



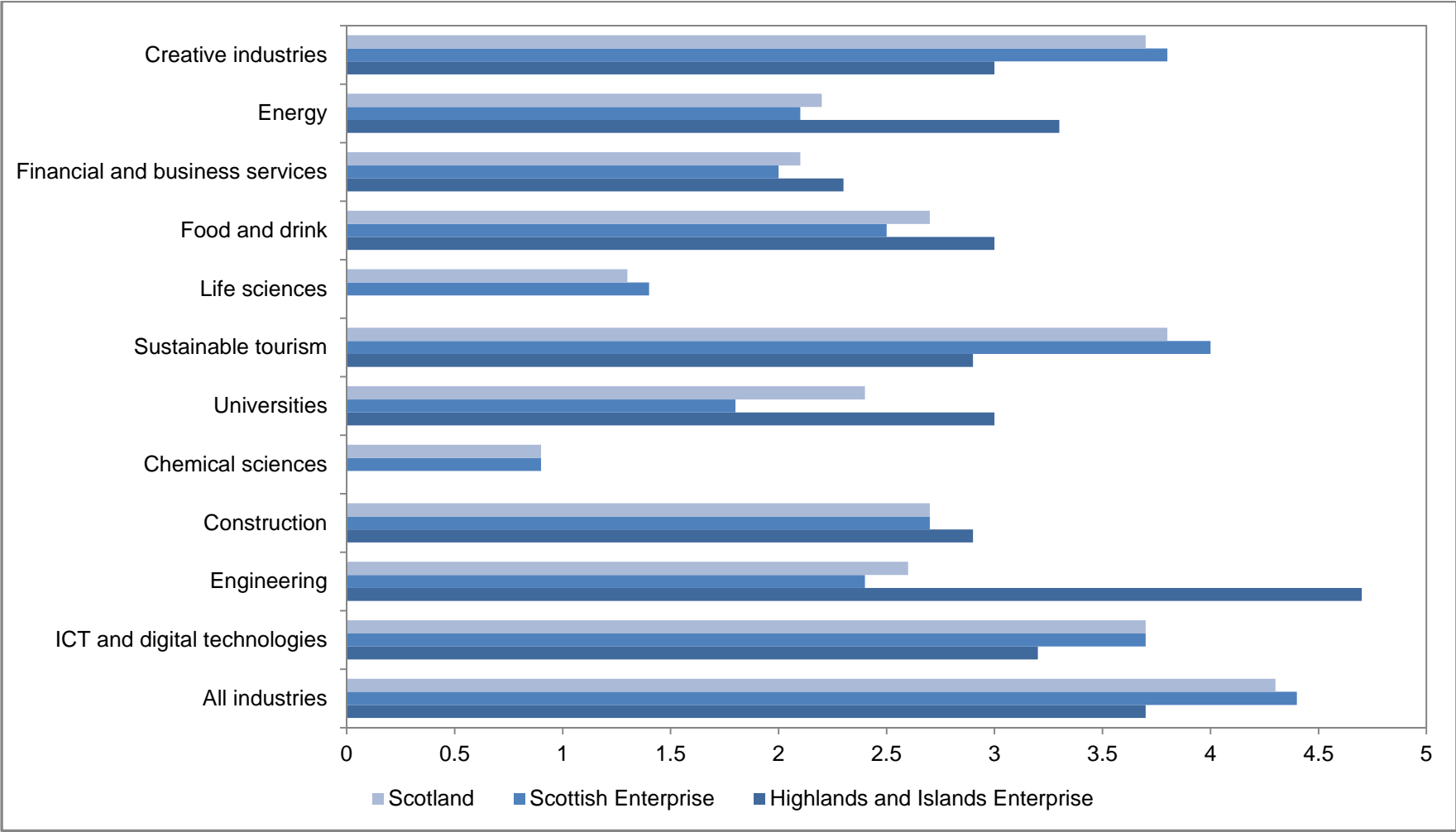
**Figure A3.19: Older People as % of Total Self-employment in Growth Sectors, 2009 and 2013, Highlands and Islands Enterprise Area**



Source: Annual Population Survey

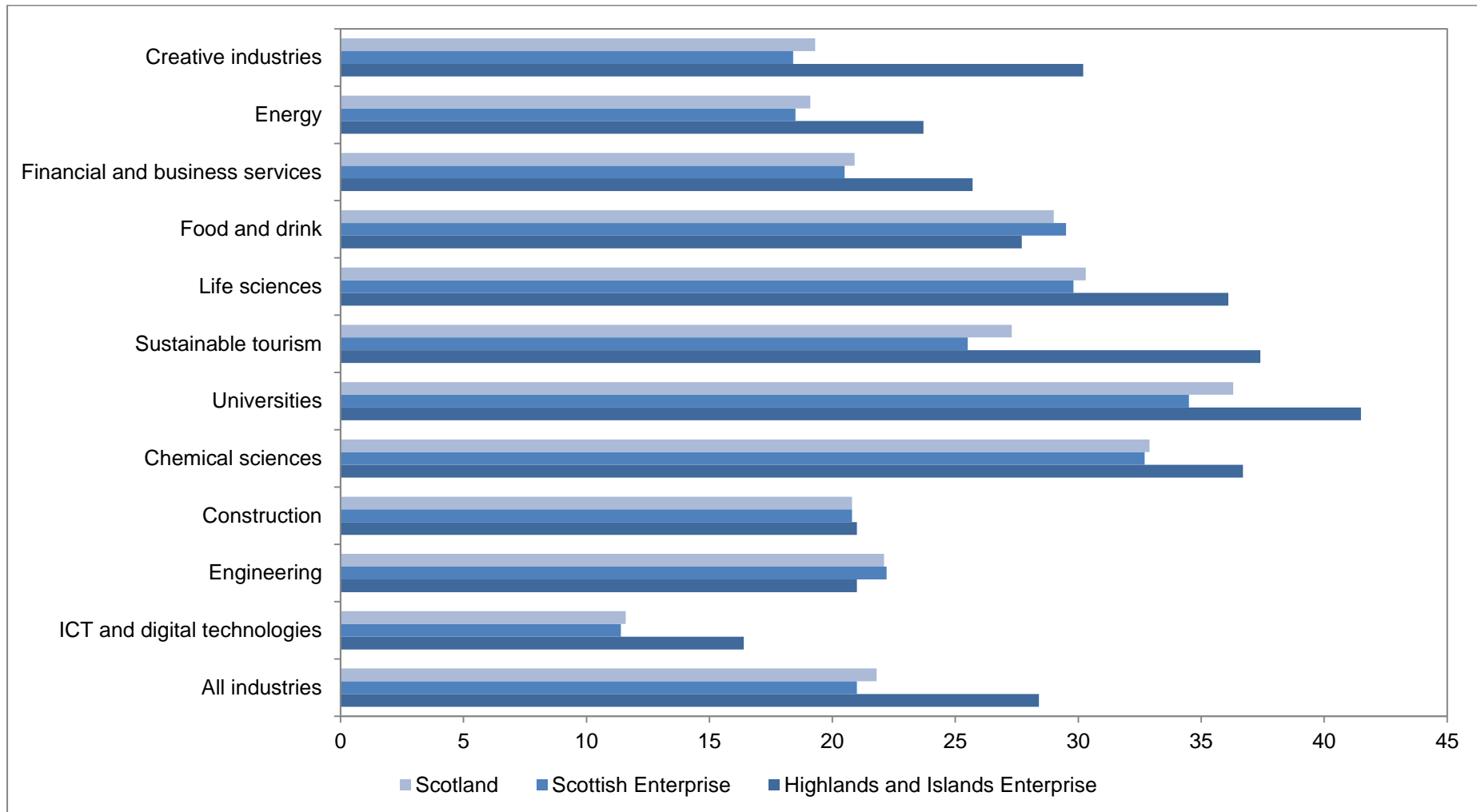
Note: Data is not available for creative industries (2013), energy, financial and business services (2009), life sciences, universities, chemical sciences, engineering and ICT and digital technologies (as fewer than 30 cases).

Figure A3.20: Directors Aged Under 30 in Growth Sectors, 2014



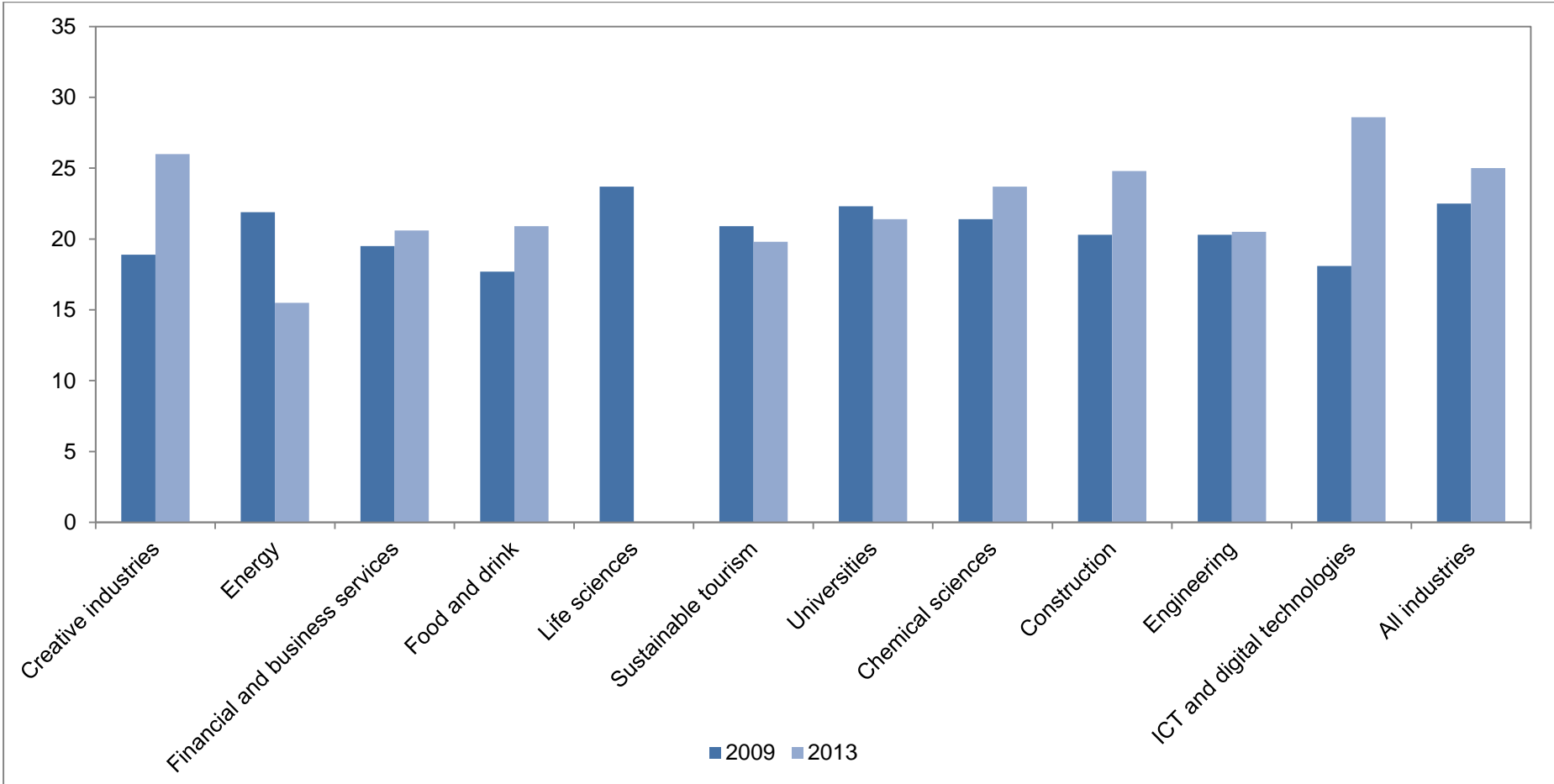
Source: Financial Analysis Made Easy (FAME) database

**Figure A3.21: Directors Aged 60 and Over in Growth Sectors, 2014**



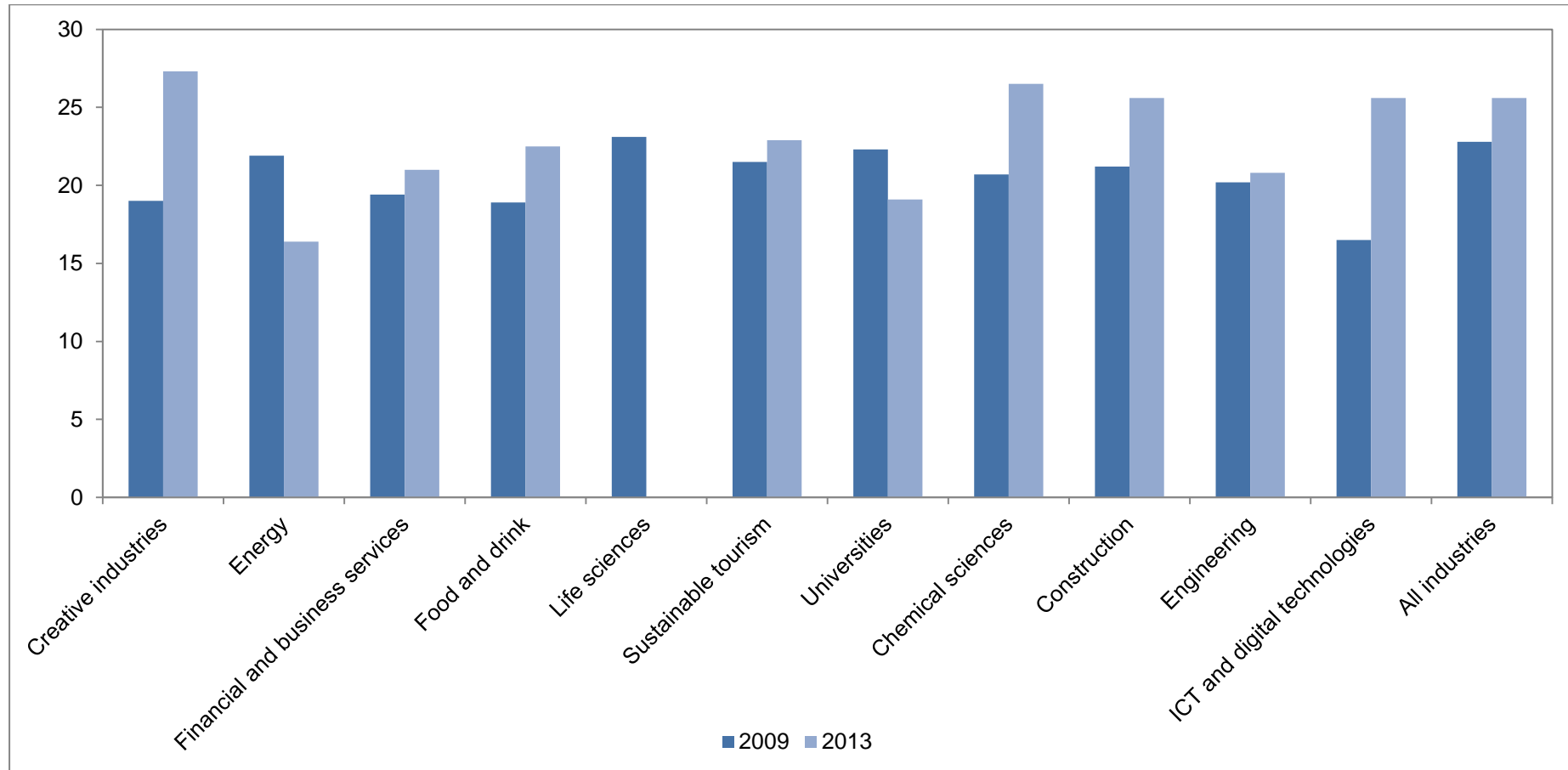
Source: Financial Analysis Made Easy (FAME) database

**Figure A3.22: Individuals with a Health Problem Lasting More Than 12 Months as % of Total Employees in Growth Sectors, 2009-2013, Scotland**



Source: Annual Population Survey  
Note: Data is not available for life sciences (2013) (as fewer than 30 cases).

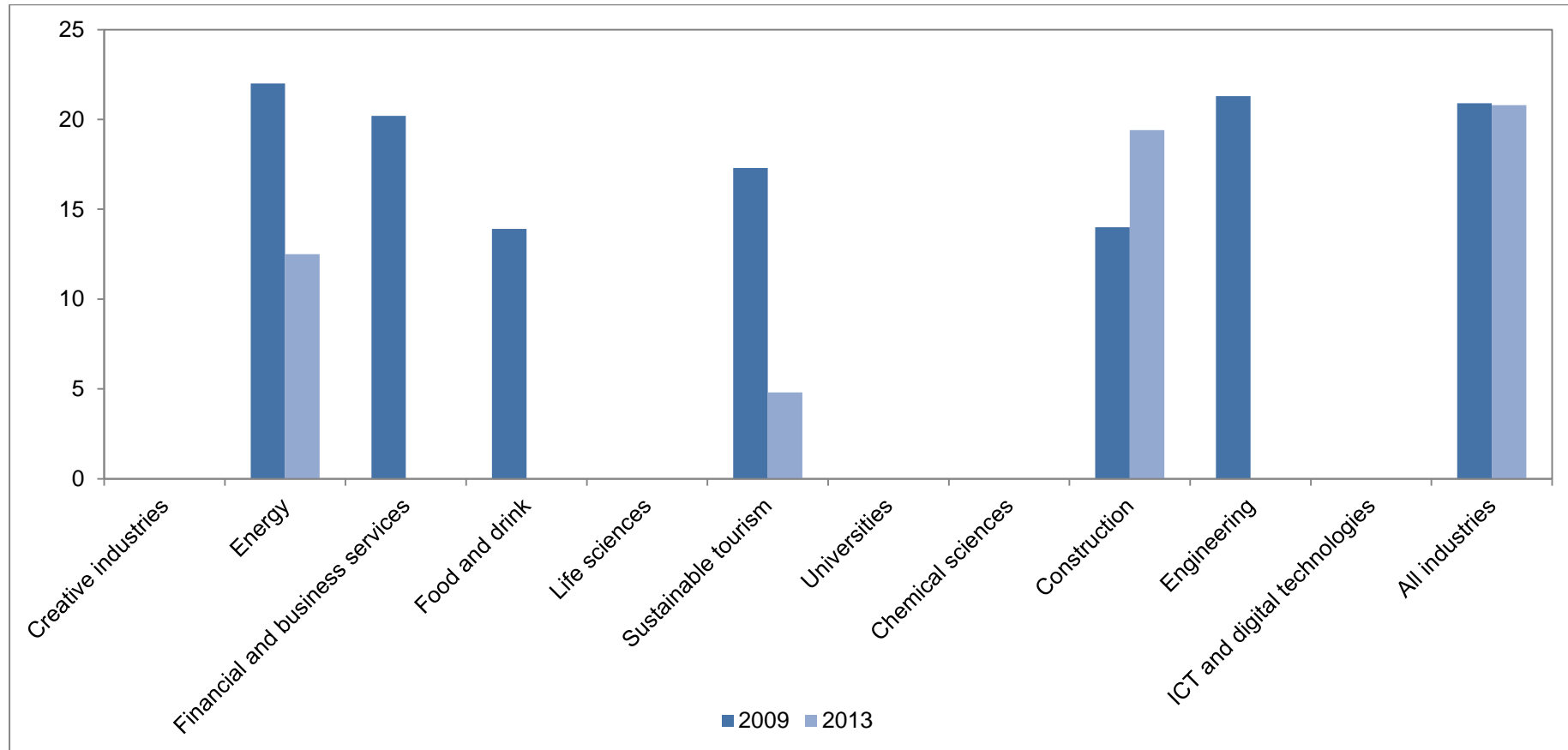
**Figure A3.23: Individuals with a Health Problem Lasting More Than 12 Months as % of Total Employees in Growth Sectors, 2009-2013, Scottish Enterprise Area**



Source: Annual Population Survey

Note: Data is not available for life sciences (2013) (as fewer than 30 cases).

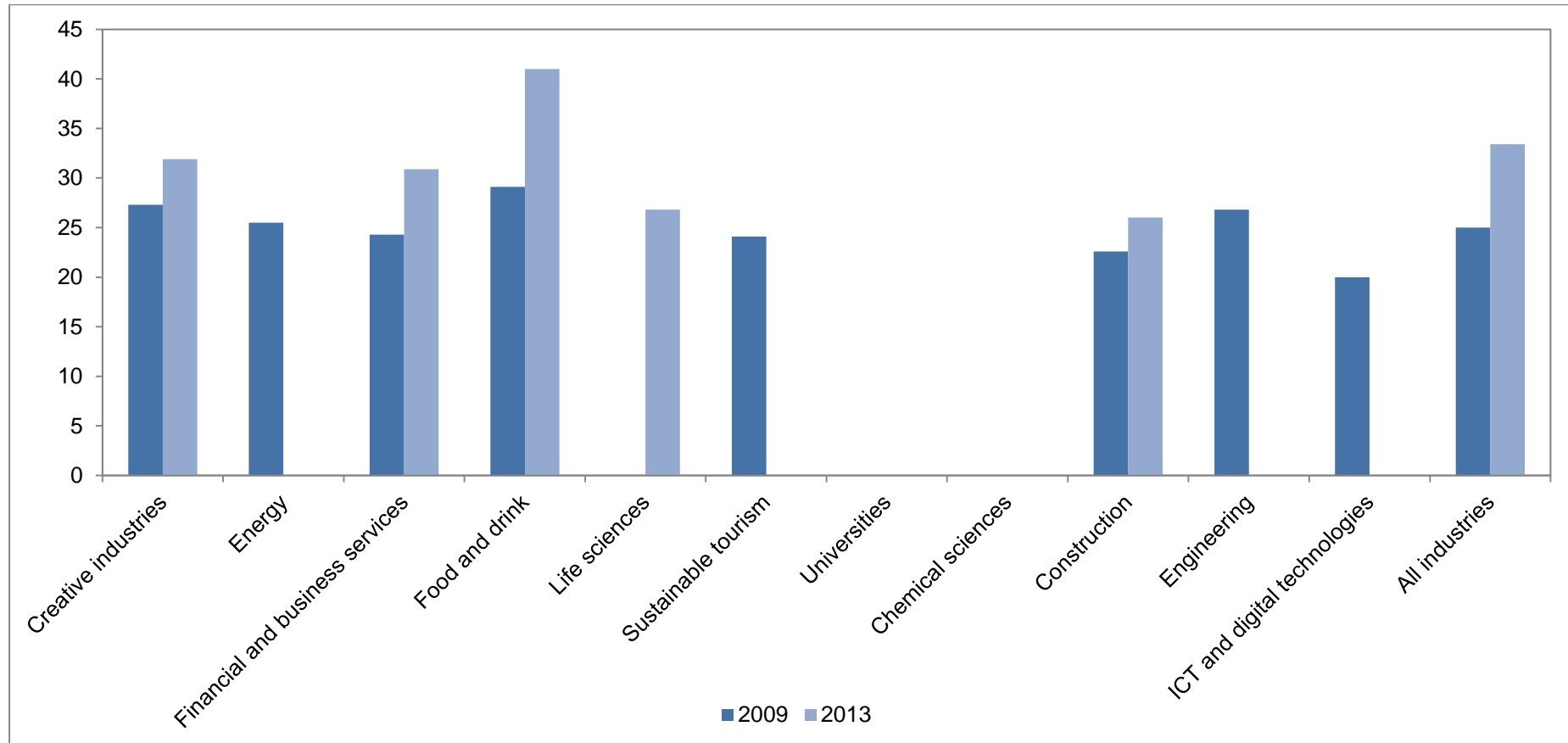
**Figure A3.24: Individuals with a Health Problem Lasting More Than 12 Months as % of Total Employees in Growth Sectors, 2009-2013, Highlands and Enterprise Area**



Source: Annual Population Survey

Note: Data is not available for creative industries, financial and business services (2013), food and drink (2013), life sciences, universities, chemical sciences, engineering (2013) and ICT and digital technologies (as fewer than 30 cases).

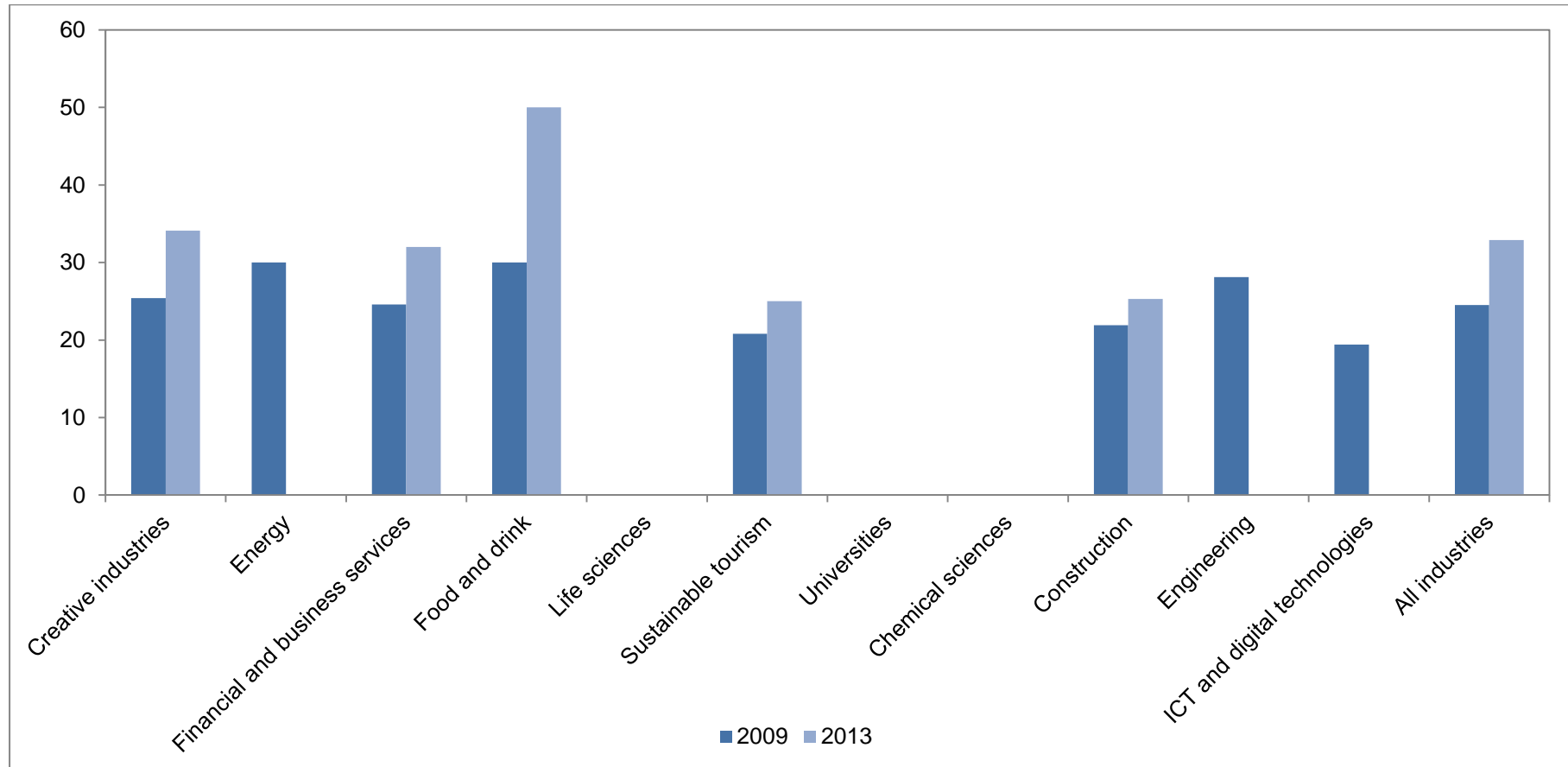
**Figure A3.25: Individuals with a Health Problem Lasting More Than 12 Months as % of Total Self-employment in Growth Sectors, 2009-2013, Scotland**



Source: Annual Population Survey

Note: Data is not available for energy (2013), life sciences (2009), sustainable tourism (2013), universities, chemical sciences, engineering (2013) and ICT and digital technologies (2013) (as fewer than 30 cases).

**Figure A3.26: Individuals with a Health Problem Lasting More Than 12 Months as % of Total Self-employment in Growth Sectors, 2009-2013, Scottish Enterprise Area**

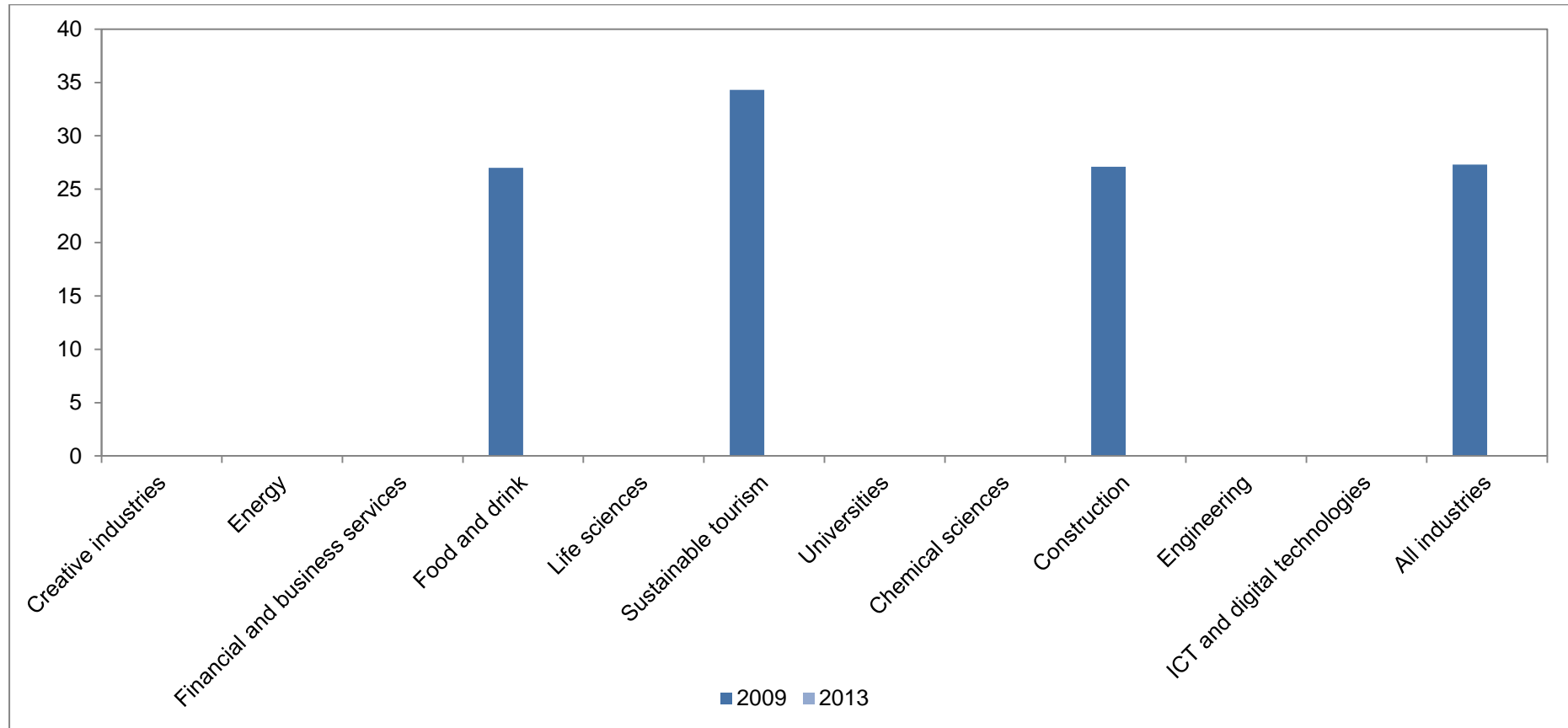


Source: Annual Population Survey

Note: Data is not available for energy (2013), life sciences, universities, chemical sciences, engineering (2013) and ICT and digital technologies (2013) (as fewer than 30 cases).



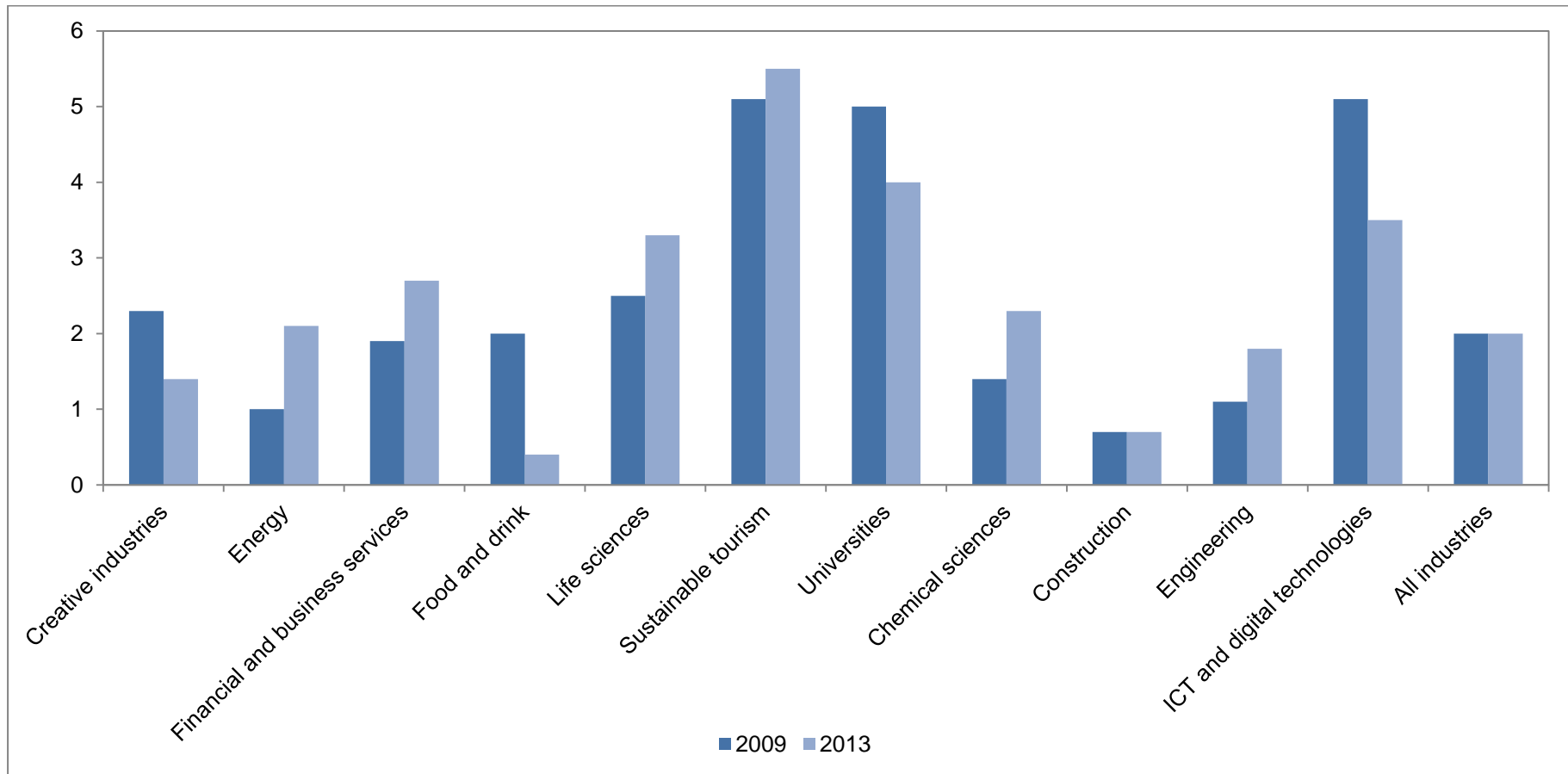
**Figure A3.27: Individuals with a Health Problem Lasting More Than 12 Months as % of Total Self-employment in Growth Sectors, 2009-2013, Highlands and Islands Enterprise Area**



Source: Annual Population Survey

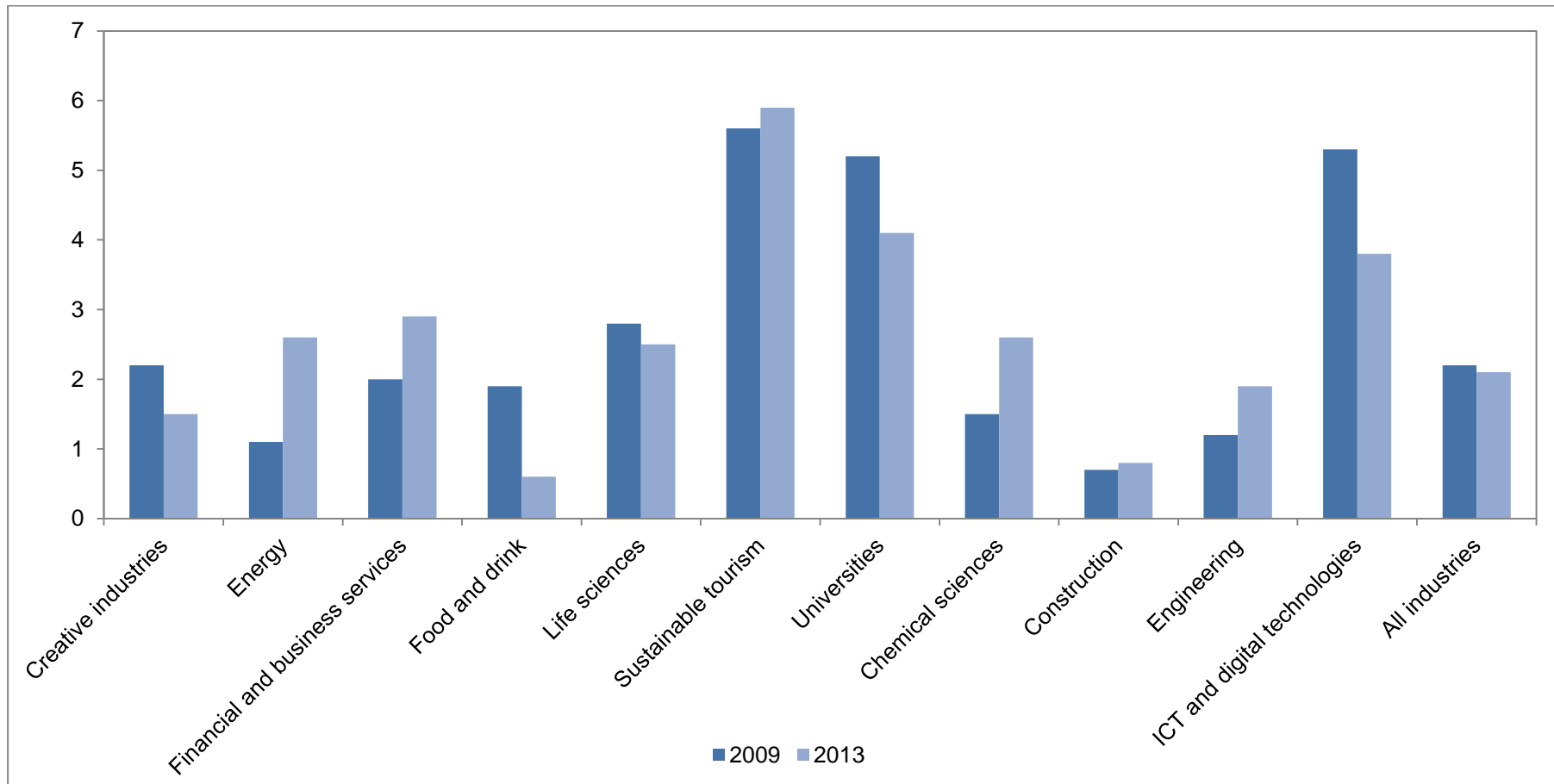
Note: Data is not available for creative industries, energy, financial and business services, food and drink (2013), life sciences, sustainable tourism (2013), universities, chemical sciences, construction (2013), engineering and ICT and digital technologies (as fewer than 30 cases).

**Figure A3.28: Ethnic Minorities as % of Total Employees in Growth Sectors, 2009-2013, Scotland**



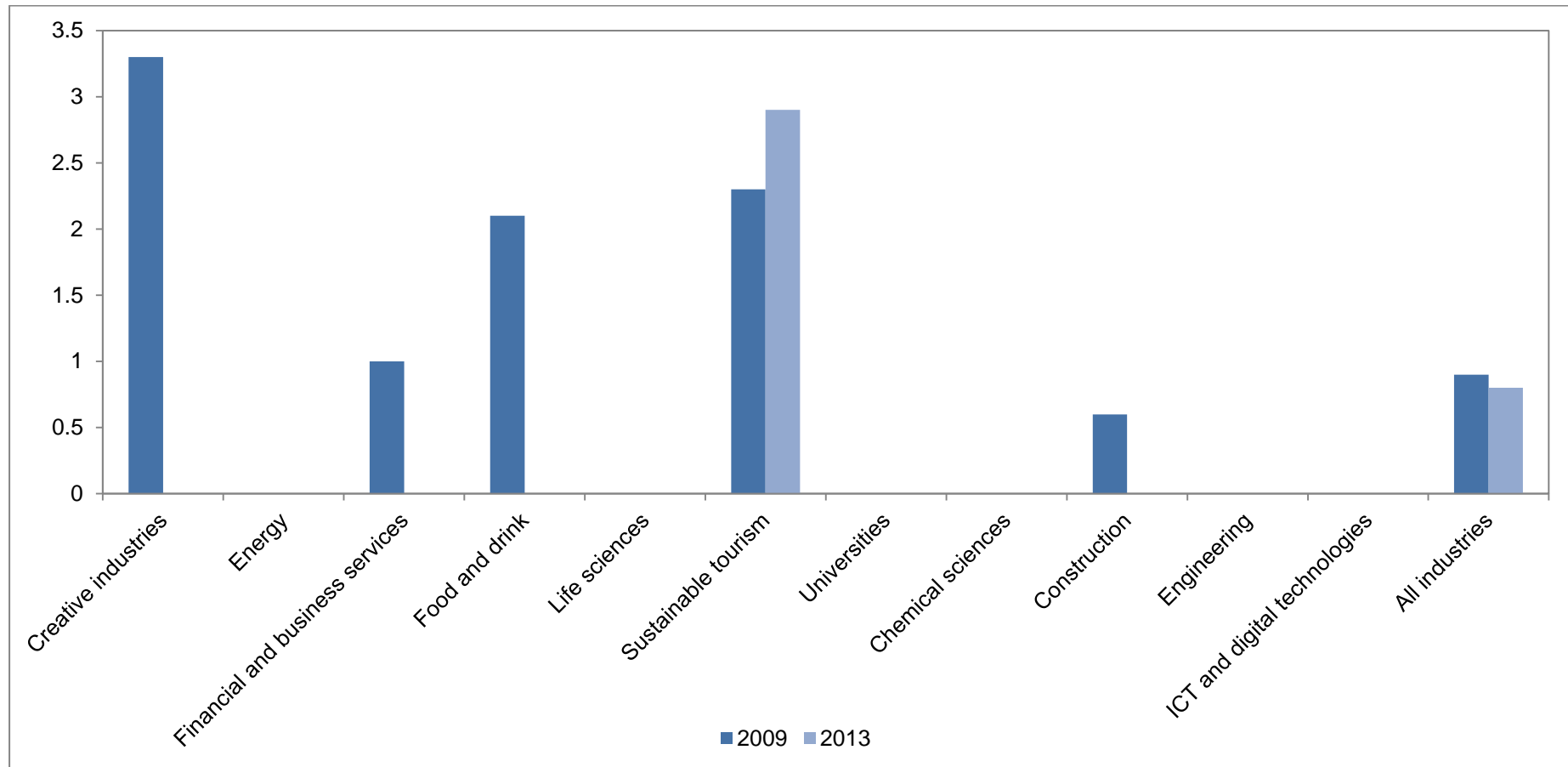
Source: Annual Population Survey

**Figure A3.29: Ethnic Minorities as % of Total Employees in Growth Sectors, 2009-2013, Scottish Enterprise Area**



Source: Annual Population Survey

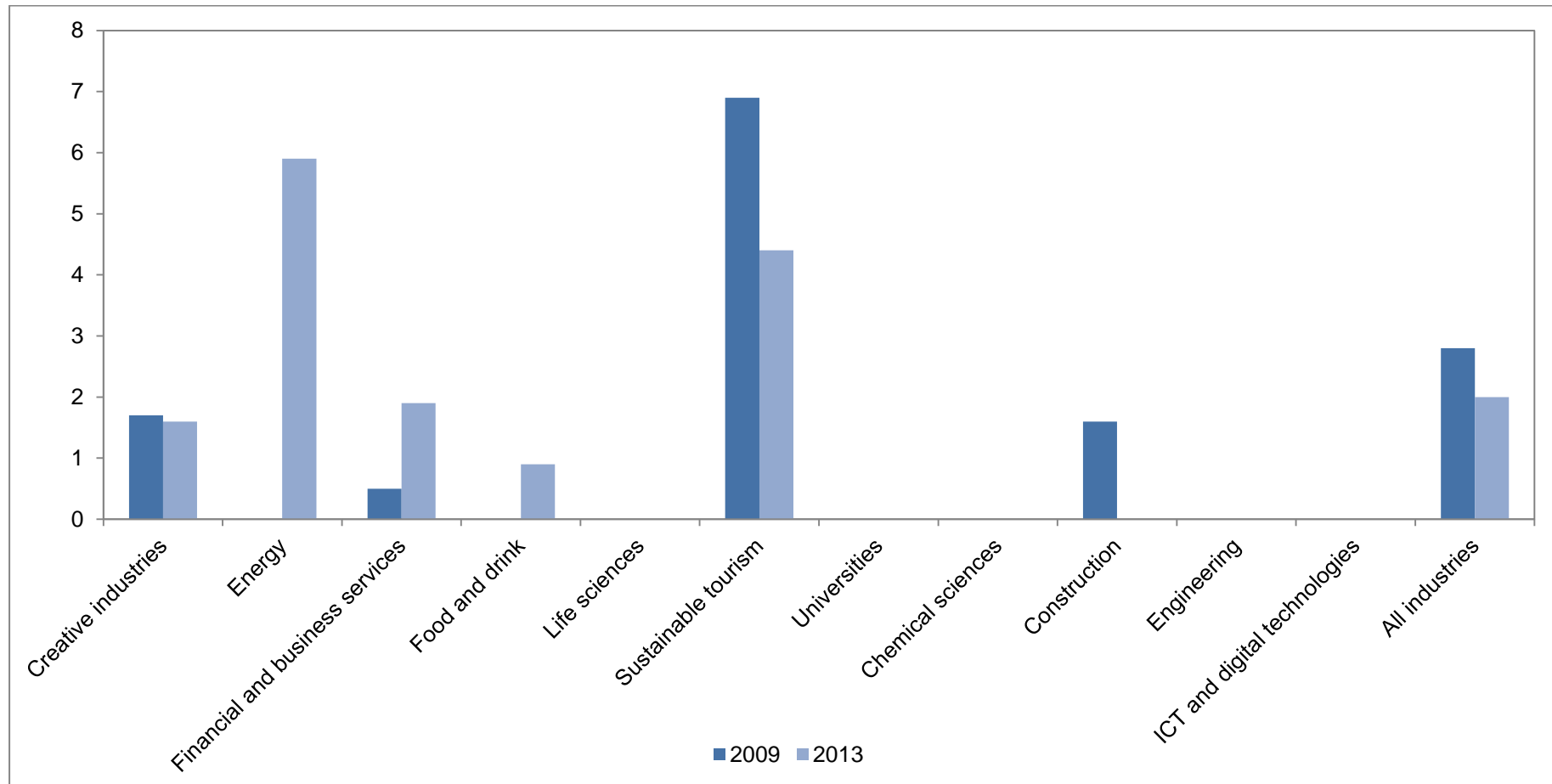
**Figure A3.30: Ethnic Minorities as % of Total Employees in Growth Sectors, 2009-2013, Highlands and Islands Enterprise Area**



Source: Annual Population Survey

Note: Data is not available for creative industries (2013), energy, financial and business services (2013), food and drink (2013), life sciences, universities, chemical sciences, construction (2013), engineering and ICT and digital technologies (as fewer than 30 cases).

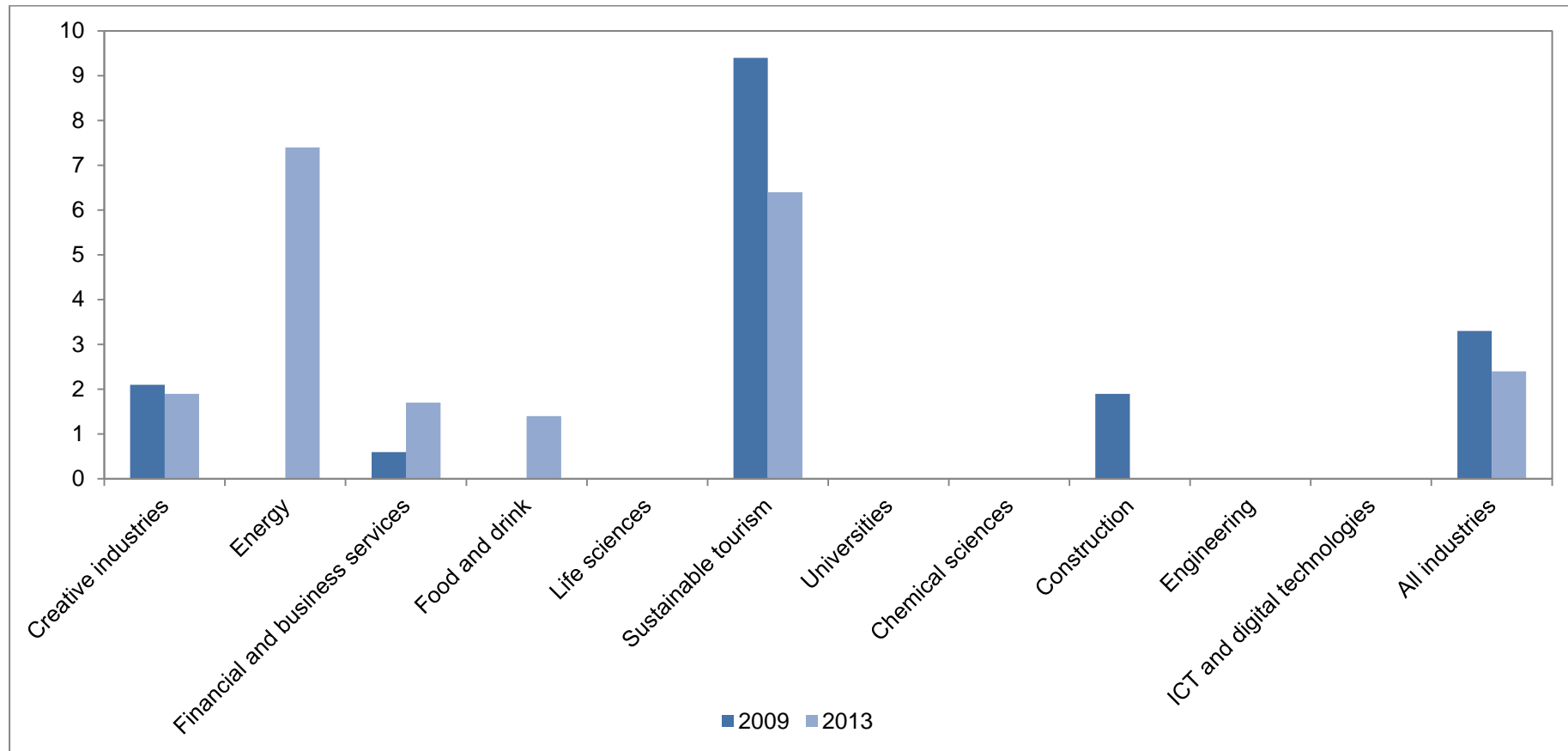
**Figure A3.31: Ethnic Minorities as % of Total Self-employment in Growth Sectors, 2009-2013, Scotland**



Source: Annual Population Survey

Note: Data is not available for energy (2009), food and drink (2009), life sciences, universities, chemical sciences, construction (2013), engineering and ICT and digital technologies (as fewer than 30 cases).

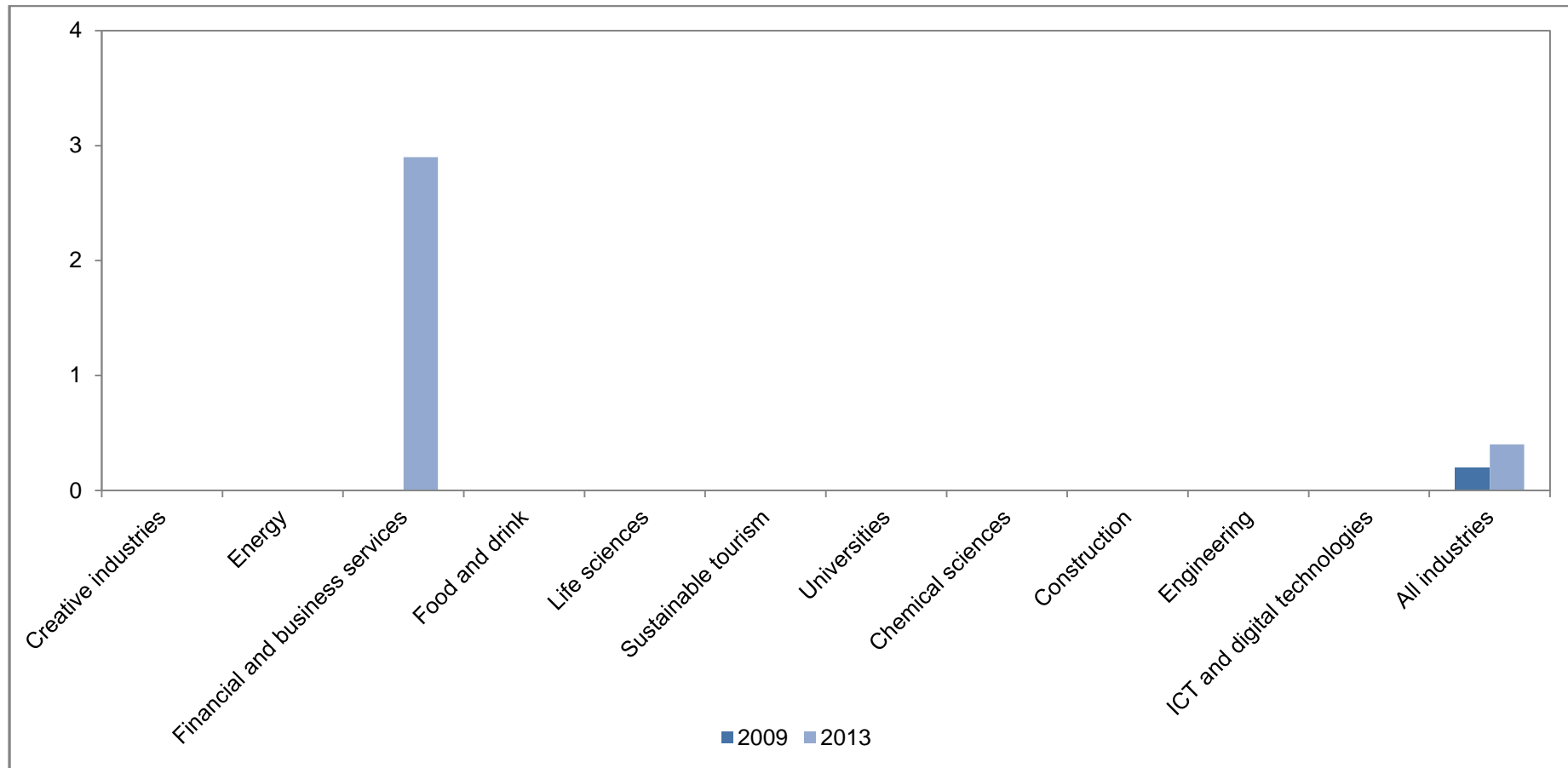
**Figure A3.32: Ethnic Minorities as % of Total Self-employment in Growth Sectors, 2009-2013, Scottish Enterprise Area**



Source: Annual Population Survey

Note: Data is not available for energy (2009), food and drink (2009), life sciences, universities, chemical sciences, construction (2013), engineering and ICT and digital technologies (as fewer than 30 cases).

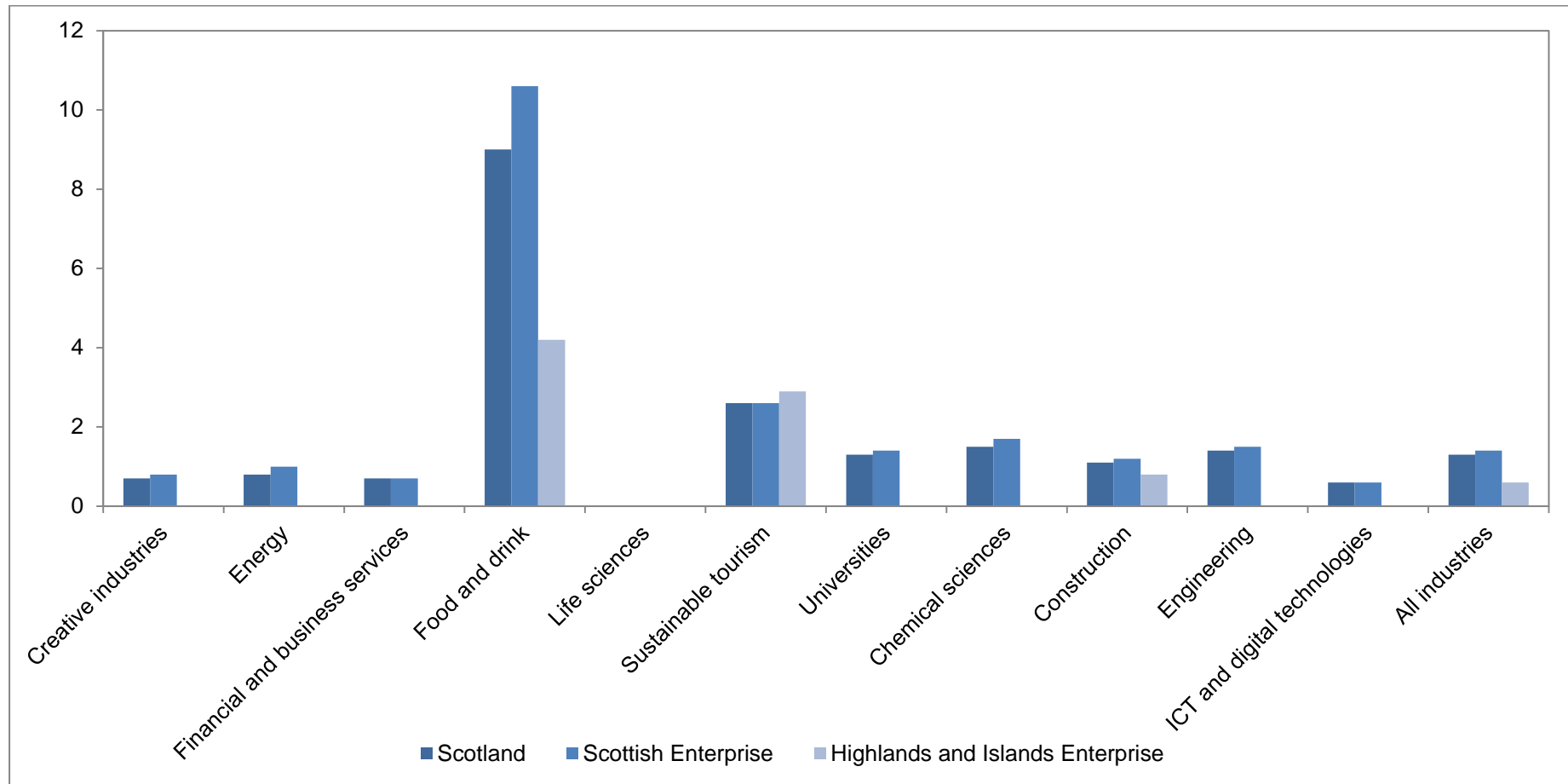
**Figure A3.33: Ethnic Minorities as % of Total Self-employment in Growth Sectors, 2009-2013, Highlands and Islands Enterprise Area**



Source: Annual Population Survey

Note: Data is not available for any sectors except financial and business services in 2013 as fewer than 30 cases.

**Figure A3.34: White Polish as % of Total Employees in Growth Sectors, 2013**



Source: Annual Population Survey

Note: Data is not available for life sciences (as fewer than 30 cases).



## APPENDIX 4: DATA AVAILABILITY

### Data Availability

Whilst we have been able to access a wide range of data for this study, there are a number of gaps. These include:

- Data on business leadership. Companies House requires all registered businesses to provide gender and age of company directors – enabling an analysis by gender and age to be undertaken. At the moment, no other personal characteristics are required – meaning no data on other protected characteristics is available. As part of this study, we consulted with a number of organisations including Scottish Chambers of Commerce, CBI, the University of Glasgow Library and the Mitchell Library Business Section and none were aware of any alternative sources of data on business leadership by protected characteristic.
- Data on the leadership of Scottish Enterprise and Highlands and Islands Enterprise ‘high growth account managed companies’. This is not currently captured in the data SE and HIE hold on these companies.
- There is only limited data available on the representation of the protected characteristic of religion and marital status in the growth sectors (employment and self-employment). In addition, within the protected characteristic of race, only limited data is available on recent migrants from the EU Accession Countries – although the additional of ‘white Polish’ to the list of ethnicities will help to address this over the longer term.
- No data is available on the representation of the protected characteristics of gender reassignment, maternity and pregnancy and sexual orientation by growth sector.
- Whilst the APS has provided data on employment and self-employment for all growth sectors, in some cases, the survey size has meant the numbers have not been sufficiently robust to publish.

Whilst most of these issues cannot be easily resolved by Scottish Enterprise, Highlands and Islands Enterprise and Skills Development Scotland, there are two issues in relation to data that would be worth putting in place a mechanism to capture.

- Data on business leadership by gender and age is drawn from a ‘live’ database (known as FAME), meaning that it is not possible to compare data over time. However, by establishing a set date for extracting the data from FAME (say in December of each year), it would be possible to develop a time series data for these key indicators.
- Data is not available on the leadership of the high growth companies being supported by Scottish Enterprise and Highlands and Islands Enterprise through their account management processes. This could be resolved by capturing this data as part of ongoing client relationship management processes.