The Optical Workforce Survey

Full report

Led by the College of Optometrists
in partnership with:

abdo
Association of British Dispensing Opticians

General Optical Council

Optometry Schools Council

Association of Optometrists

LOC SUPPORT UNIT
SUPPORT FOR PRIMARY EYE CARE DEVELOPMENT

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OPTOMETRY NORTHERN IRELAND

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THE COLLEGE OF OPTOMETRISTS

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Optical Workforce Survey Advisory Group

Association of British Dispensing Opticians

Association of Optometrists

College of Optometrists

Federation of Ophthalmic and Dispensing Opticians

General Optical Council

Local Optometric Committee Support Unit

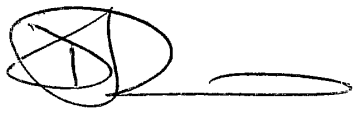
Optometry Northern Ireland

Optometry Schools Council

Optometry Scotland

Optometry Wales

Foreword



David Parkins
President of the College of Optometrists

The Optical Workforce Survey 2015 follows on from the College's 2010 survey, with one notable exception: this time the survey has been extended to include dispensing opticians in order to gather data designed to support sector-wide trend analysis on key changes affecting the workforce and workforce planning.

Although not exhaustive, it provides a more comprehensive picture of the optometric workforce than ever before. This couldn't have come at a more interesting, or challenging time. The new workforce survey has been conducted against a backdrop of emerging concerns from the College membership, and the wider optical professions, about increasing numbers of optometry students, its impact on competition for jobs and reports of static, or even falling, remuneration.

As a workforce survey, it was designed to measure changes in the workforce since 2010 and gather data on the factors that may affect current and future workforce capacity. So, although it did not directly aim to determine whether there is an over- or undersupply of optical sector professionals in the UK, the results can be used to identify and begin to explore critical questions around this and other factors influencing the workforce. As such, it can help address questions including – what is the current size of the optical workforce? Has the optical workforce increased? How has the optical workforce changed? Does workforce capacity have an impact on income?

The results are fascinating. It finds that, if anything, when weighed against preferences for flexible working, changes to service delivery structures, and key demographic changes in the population, we may in fact be facing an undersupply of the optometric workforce overall, but that there may be pockets of regional oversupply, and more marked undersupply in some geographical areas.

More positively, it finds high levels of job satisfaction, low evidence of any skills gaps and a significant percentage of the workforce pursuing further professional development, over and above the regulator's CET requirements.

It points to a greater move to part-time working, self employment and locum working. It does find some evidence to support members' claims of falling salary levels and it also finds that, seemingly, women may be paid less than men for equivalent roles, even when full-time and part-time working has been controlled for. However it has not been possible to fully examine the potential effects of differences in work setting and specific roles in this report. A more detailed examination of how changes within the sector beyond just the absolute number of optometrists or dispensing opticians trained or registered to practice may now be needed.

All of these things require further and urgent investigation. How should the workforce be trained to take advantage of the needs and opportunities that exist and when do they need to have these skills in place to proactively influence change? What will be the effect of more flexible working arrangements? Does a gender pay gap exist – and if so, how can it be addressed?

Good and bad, these are issues that concern us all and that are not in any single body's gift to solve. That is why we all, as a sector, in the same collaborative way we have conducted the work that underpins this report, will cooperate to find a way forward – the regulator, professional bodies, trade associations, universities and employers alike.

It is in all of our interests to work together to ensure that the optical workforce is distributed to be able to meet the population's needs and is treated equally and rewarded fairly for its work.

Executive summary

Key findings

- **Capacity:** There could be a net loss of capacity in both optometry and dispensing optics if the stated career path preferences of survey respondents within the next five years are representative of the professions as a whole.
- **Demographics:** Based on Optical Workforce Survey (OWS) 2015 data, 65% of optometrists and 70% of dispensing opticians currently work full time.
- **Remuneration:** The percentage of optometrist respondents earning up to £40,000 per year has risen since the survey was last conducted in 2010, while those earning over £40,000 per year has fallen.
- **Remuneration:** The average income of female optometrists and dispensing opticians, in the majority of age groups, was lower than that of their male colleagues, even once part-time working had been taken into account, but whether this was the case for comparable work in comparable settings was not clear.
- **Supply:** A definitive view of whether there was an overall under or oversupply of the optical workforce was not possible to ascertain, but differences in regional supply relative to population throughout the UK were clear.
- **Demand:** The project estimated the current total number of full-time equivalent (FTE) optometrists (based on a scaling up of stated working hours of respondents, calculated as percentage of a FTE) and compared that to an estimate of what number might be considered necessary to serve the current UK population. This estimated that there are currently 12,099 FTE optometrists in the UK, whereas 12,912 FTE optometrists might be needed to meet the needs of the population. However, the complexity involved in any workforce modelling should be remembered – these figures are indicative rather than definitive.
- **Job satisfaction:** Respondents rated their overall job satisfaction and also satisfaction with a list of 10 individual job factors using a scale of 1-7 (1= extremely dissatisfied; 7= extremely satisfied). 80% of optometrists and 79% of dispensing opticians rated their overall job satisfaction 5, 6, or 7.
- **Locum working:** 17.5% of respondent optometrists and 9.1% of respondent dispensing opticians worked primarily as locums. This was a substantial increase from the OWS 2010, which found that 10.5% of optometrists were locum practitioners. This finding supported qualitative data provided by employer stakeholders who thought that an increased number of optometrists seemed to prefer locum work to regular employment.

Recommendations

- **Optical sector bodies:** Optical sector organisations should continue to examine the various factors influencing workforce distribution, demographics and capabilities. Opportunities to improve data capture about the workforce across the sector should be explored and where feasible developed. Without this there is a danger that some regions and communities could be at risk due to limited access to primary eye healthcare professionals.
- **General Ophthalmic Services contracts and geography:** The impact of the current economic and healthcare structures on workforce distribution and availability of services should be explored further. If necessary, mechanisms for increasing workforce mobility and improving the distribution of primary eye healthcare service providers in particular should be considered.
- **Optical sector employers:** Clinical appraisals are a key component to maintaining and developing clinical practice and professional development. Employers of optometrists and dispensing opticians could review current levels of staff appraisal, in particular that relating to clinical practice, with a view to ensuring that appraisals meet the current, complex needs of both optical sector professionals and employers, and developing a future workforce that meets the changing needs of the population.
- **Providers of Continuing Professional Development (CPD):** Providers should review the content of training resources and materials to determine whether this could be developed to better support professionals who are working part time or self employed or in locum roles.
- **Equality and diversity:** Employers should consider whether there is equality of opportunity for all employees by examining pay, appraisal and career progression and promotion.

About the Optical Workforce Survey 2015

The aim of the Optical Workforce Survey 2015 (OWS 2015) was to provide an up-to-date view of the primary eye healthcare workforce in the UK. In 2010, the College of Optometrists completed an Optometric Workforce Survey (OWS 2010) to gather data on the optometry profession in the UK and to provide baseline data that could be used to investigate trends for the dual purposes of workforce planning and for the wider development of the profession.

Led by the College with support from the cross-sector project Advisory Group, the OWS 2015 analysed quantitative and qualitative data to examine how the workforce has changed since 2010 and to identify factors influencing the work of the optical professions in the next five years, including workforce capacity and the adequacy of the optical workforce to meet demand. The scope of the OWS 2015 was extended to include dispensing opticians in order to ensure a more complete picture of the optometric workforce, and qualitative interviews for additional detail. The research took place between December 2014 and October 2015.

The objectives of the OWS 2015 were:

1. to describe the characteristics of the optometrist and dispensing optician workforces
2. to measure changes in the optometric workforce since the OWS 2010
3. to assess the potential and limitations of existing data to quantify the current optometrist and dispensing optician workforces
4. to explore factors that could impact on future workforce capacity

Methodology

The main research methods included:

- a structured questionnaire, with versions for optometrists and dispensing opticians
- semi-structured interviews with a sample of stakeholders from the optical sector to provide background information on optical workforce issues and to provide further insight into issues raised in the questionnaires
- desk research on workforce planning and optical workforce studies

The survey sample

The sample for the optometrist survey was a randomised sample of 2,000 College members. For the dispensing optician survey, a census approach was taken, on the advice of the Association of British Dispensing Opticians (ABDO). A link to the online survey was sent to all recipients of the ABDO newsletter (~ 8,000 members) with an invitation for all fully qualified members (approximately 5,700, excluding students, retired members, and international members) to reply.

The combined response rate (online and postal questionnaires) for optometrists was 641 questionnaires (32.05%). The response rate for dispensing opticians was 577 online questionnaires (10.1%). However, a number of respondents in both groups dropped out at the first forced choice question; the total number of optometrist questionnaires completed to the end was 598 (29.9%) and the total number of dispensing optician questionnaires completed was 453 (7.9%).

Both versions of the questionnaire covered the following areas:

- education, training and professional development
- workplace and clinical profile
- job satisfaction
- workforce
- personal profile
- geography
- family
- health

Interviews were conducted with stakeholders, including optometrists, dispensing opticians, academics, optical professionals working in the devolved nations, national employers, members or representatives of professional bodies, students, and other optical sector professionals. Interviews covered the following topics:

- factors relevant to reviewing and planning the optical workforce
- changes to the workforce
- motivation to enter, stay in, or leave an optical sector profession
- best and worst things about being an optometrist or dispensing optician
- strengths and weaknesses of the optical workforce

Results

Gender: The majority of survey respondents in both professions were female: 57.5% of optometrists and 53.5% of dispensing opticians. The gender balance within the optometrist questionnaire is within 2% of the General Optical Council (GOC) registration data, suggesting that the sample was representative in terms of gender. Most of the interviewees commented on the changing gender demographics of the optical professions; the professions were male dominated a generation ago, but after a gradual change, females now formed the majority of the professions.

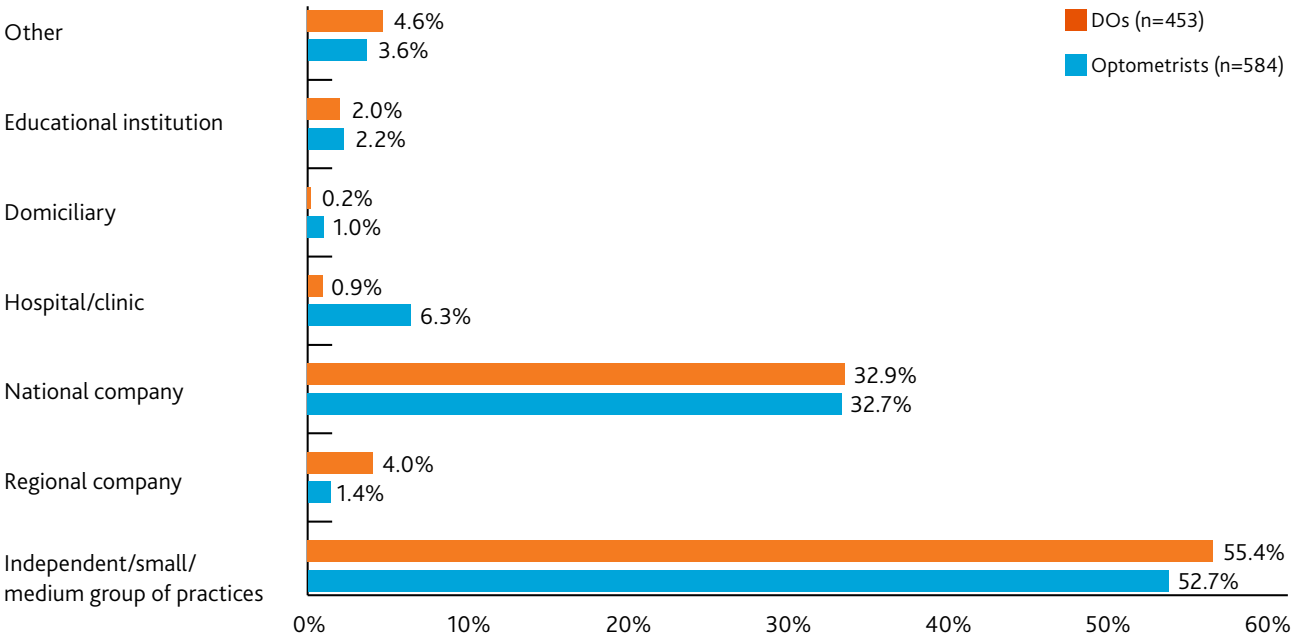
Age: GOC data and OWS 2010 and 2015 data support the hypothesis that the optometry workforce is ageing. This is despite increases in the numbers joining the register.

Table showing GOC registration data (age of optical workforce registrants in years)

OPTOMETRISTS	25 OR UNDER	26–39	40–54	55+
2010	6%	48%	32%	15%
2011	6%	48%	31%	15%
2012	6%	48%	31%	15%
2013	5%	43%	28%	23%
DISPENSING OPTICIANS				
2010	3%	42%	41%	15%
2011	3%	42%	42%	14%
2012	3%	41%	40%	16%
2013	2%	38%	40%	20%

Place of work: Respondents to the survey were mostly employed in independent practice settings. For both optometrists and dispensing opticians, those working in settings for large national companies were under-represented in the survey sample as the percentage working in those settings are widely recognised to be much higher than the percentages chart on page 9.

Figure showing primary work base of survey respondents



Hours of work: In terms of full-time or part-time working, 59.1% of optometrists worked full time compared with 70.9% of dispensing opticians. Women represented the greatest percentages of part-time workers, both employed and self-employed, across both professional groups. Respondents' hours worked were used to calculate how many worked full time, and for those in a part-time role, their FTE. Based on this, 65% of optometrists and 70% of dispensing opticians worked full time.

Annual income: The mean annual income reported by optometrists was £44,328 per year, but the standard deviation was wide – £33,562. The median point of £39,500 and the mode of £40,000 indicate that a better average measure would be approximately £40,000 per year.

For dispensing opticians, the median point was £26,000 and the mode was £30,000 so an estimate of average annual salary would be between £26,000 and £30,000. The mean annual income for dispensing opticians was £44,728, but the standard deviation was £118,635; removing the top and bottom per cent (outliers), the mean salary for dispensing opticians reported was £34,606, with a standard deviation of £57,063.

Although charts on page 10 appear to show that women earn less on average in most age groups than men, even once full-time/ part-time working has been controlled for, the possible effects of differences in work settings and specific roles has not been examined. So while on average, across all roles and settings and in almost all age groups, women earn less than men, it is not possible to determine whether there are specific inequalities in terms of men and women being paid equally for the same work.

Figure 12: Optometrist average income by age and gender (controlled for part-time working)

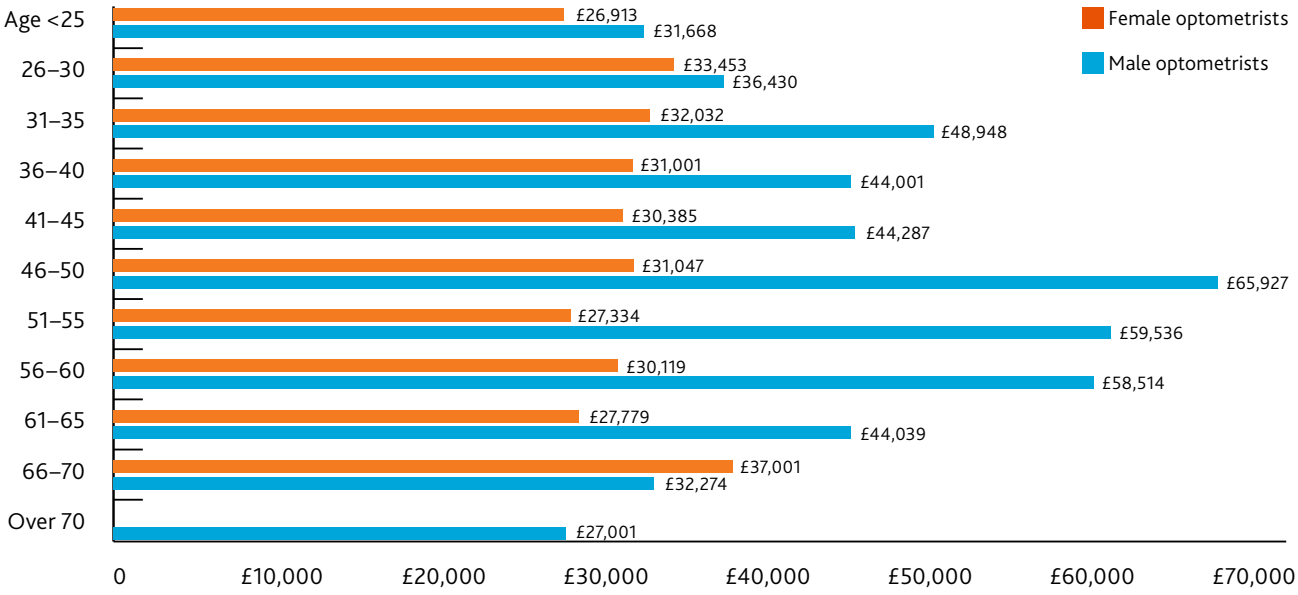
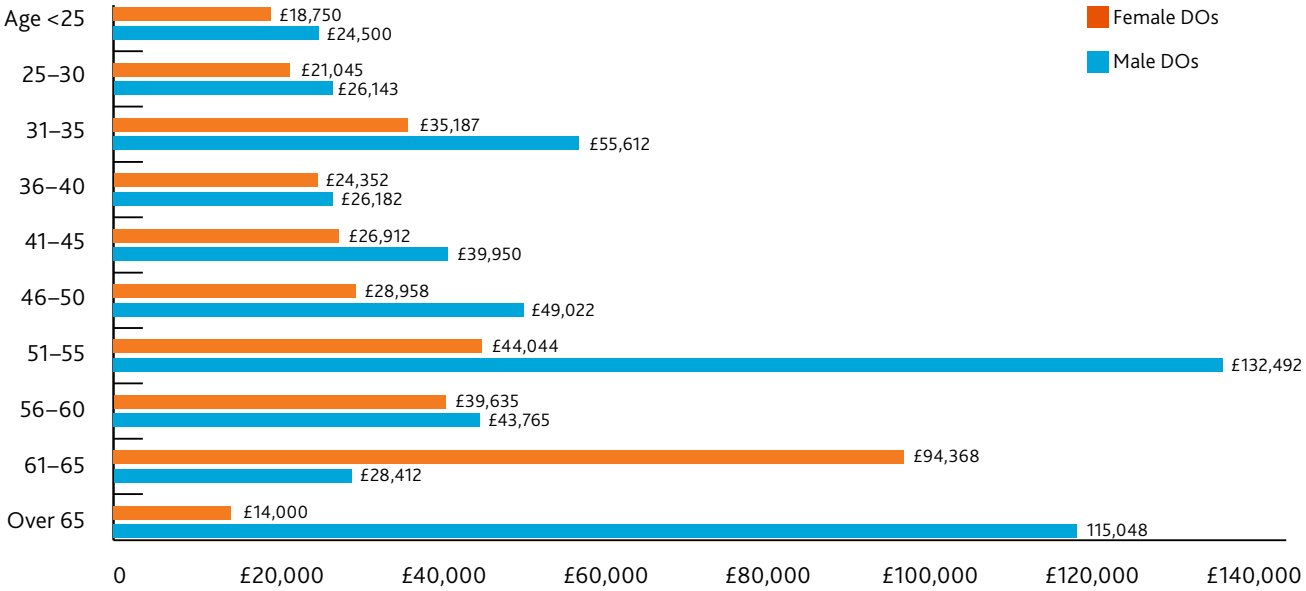


Figure 13: Dispensing optician average income by age and gender (controlled for part-time working)



Job satisfaction: Respondents rated their overall job satisfaction and satisfaction with a list of 10 individual job factors using a scale of 1-7 (1= extremely dissatisfied; 7= extremely satisfied); 80% of optometrists and 79% of dispensing opticians rated their overall job satisfaction 5, 6, or 7.

Career preferences within the next five years: Flexible working was the future career preference chosen by the highest percentage of respondents from both professional groups, as selected by 45.7% of optometrists and 35.6% of dispensing opticians; 24.3% of optometrists and 13.5% of dispensing opticians would like to decrease their working hours. Only 4.7% of optometrists and 4.5% of dispensing opticians would like to increase their working hours, but this could be a reflection of the fact that most already work full time. Based on the numbers of annual new entrants to the professions being significantly smaller than those indicating they would like to decrease their hours, there could be a net loss of capacity in both professions if the career choices of respondents within the next five years are representative of the professions as a whole.

Discussion

How does the OWS 2015 optometrist questionnaire data compare with the data from the OWS 2010?

The OWS 2010 collected data from a much larger sample (3,122 compared with 641 in 2015) and did not include dispensing opticians.

- OWS 2015 data shows a slight decrease in the percentage of female optometrist respondents (57.9%), down from 60.6% in OWS 2010.
- The percentage of respondents employed full time decreased from 48.6% (2010) to 39.4% (2015). However, respondents who answered full-time self-employed increased from 12.8% (2010) to 18.8% (2015).
- Similarly, part-time employed respondents decreased from 25.7% (2010) to 19.7% (2015) and part-time self-employed optometrists increased from 11.6% (2010) to 17.1% (2015).
- In terms of annual income, there was an increase in the percentage of respondent optometrists earning less than £30,000 per year, up from 23.8% (2010) to 31.0% (2015) and those earning £30,000 to £40,000 per year, 26.4% (2015) as compared with 24.0% in 2010.
- There was also a decrease in respondent optometrists earning more than £40,000 per year. However, it should be noted the annual income data does not take into account the number of hours worked.

What is the actual size of the optical workforce and what is the demand?

There is no single data set providing a definitive number of practising optometrists and dispensing opticians. According to the GOC registers, which record information on the gender and age of all fully qualified and student optometrists and dispensing opticians, in 2013 there were 13,589 optometrists and 6,244 dispensing opticians.

The OWS 2015 extrapolated collected FTE data onto total individual practitioner figures obtained via reports from the Health & Social Care Information Centre (2014), NHS Education for Scotland (2013) and Northern Ireland Health and Social Care (2013) to provide an estimated number of FTE optometrists in each country. Applying this formula to each of the four countries in the UK, the estimated number of FTE optometrists is as follows:

• England	9,856
• Northern Ireland	508
• Scotland	1,068
• Wales	667
Total FTE	12,099

The OWS 2015 also included a calculation of respondents' average sight test consultation time, which was then applied to the UK population using a number of assumptions about an individual optometrist's capacity: average time spent per patient consultation; average hours spent on patient contact per week; and number of eye examinations per year (including for those conducted more frequently, on the elderly and the very young) (see Section 4.4.4).

Applying these assumptions to the Office for National Statistics (ONS) 2013 population estimates suggested that meeting the needs of the UK population would require 12,912 FTE optometrists. It should be noted, however, that this is a rough calculation and that both regional differences in supply and demand and the complexity of workforce modelling (see Section 4.4) make an overall figure less meaningful.

How has the optical workforce changed, and why?

Section 4.3.3 pulls together survey data and information from several sources to identify and explore a number of emerging themes, including:

- shifting demographics (by gender, age, and ethnicity);
- the characteristics of those who work part time (by gender; whether they have dependent children or not; and by stated career preferences within the next five years); and
- the prevalence of locum working.

The OWS 2015 also addressed the question of whether workforce capacity has had an effect on income, contextualising the survey data on annual income from 2010 and 2015. Stakeholder interviews conducted for the OWS 2015 put forward at least two additional drivers for perceived falling incomes:

- regional variations in the numbers of optical professionals across the UK, and in particular in areas surrounding the optometry schools; and
- market forces and competition in the optical sector, for example, the market share of national retailers, and the impact of strategic practices involving advertising and arrangements around paying optical professionals for an eye examination.

Concluding remarks

Cross-sector cooperation is needed to improve data to inform workforce planning, and promoting equal workforce capacity in all regions of the UK requires all parties to work together – until then, there is a risk that some populations will be disadvantaged in terms of eye healthcare. If this is the case, the first objective of workforce planning will not be achieved: having the *right number*, in the *right place*, at the *right time*, with the *right skills* to provide the *right services*.

1 Background

1.1 Introduction

The UK population is changing and healthcare provision needs to keep up with the changes. The population is ageing and the number of people with long-term conditions is increasing. Furthermore, the overall population is growing: it is estimated to have risen to 64.1 million in 2013 from 63,182,178 in 2011, an increase of nearly 1.5% in just two years (Office for National Statistics, 2013).

These population changes place increased demands on healthcare provision and have a knock-on effect for the healthcare workforce who will need to grow and/or adapt to different ways of working. This is equally so in the field of eye healthcare where year-on-year increases in the prevalence of diabetes and age-related eye conditions mean that more people will visit eye healthcare professionals for investigation, diagnosis and treatment. The high street optometry practice is where most cases of eye disease are first identified and optometrists are increasingly involved in monitoring long-term conditions through locally commissioned enhanced eye care service schemes (ESS). Pressure on secondary care services and an existing shortage of ophthalmologists (Centre for Workforce Intelligence, 2014) suggests that primary care practitioners could play an increasingly important role in the future.

In professions where the NHS is the primary employer, workforce planning is usually commissioned by the government. In other healthcare professions it is left to the professional bodies to take on the responsibility of mapping and monitoring changes in the characteristics of the profession, providing data that is useful in both workforce planning and the wider development of professions.

The College of Optometrists (the College) has historically collected data relating to the optometric profession through its membership, but this data is too limited to permit it to serve as the source of effective workforce mapping or analysis for all registered optometrists. The College initiated a UK Optometric Workforce Survey in 2010 to gather current data on the UK optometry profession and to provide baseline data that could be used to investigate trends for the dual purposes of workforce planning and for the wider development of the profession.

In late 2014, as set out in the aims and objectives of the 2010 exercise, the College repeated the survey in order to measure changes in the workforce. On this occasion the survey was extended to include dispensing opticians and was supported by stakeholders from across the optical sector, including the Association of British Dispensing Opticians (ABDO), the Association of Optometrists (AOP), the Federation of Ophthalmic and Dispensing Opticians (FODO), the General Optical Council (GOC) and the Local Optometric Committee Support Unit (LOCSU), as well as a number of other industry groups and regional optometry organisations, including the Optometry Schools Council (OSC), Optometry Northern Ireland, Optometry Scotland, and Optometry Wales. The 2014 survey was conducted against a backdrop of emerging concerns from the College membership and the wider optical professions about increasing numbers of optometry students and static, or even falling, remuneration in real terms. This report presents the findings of this exercise, the Optical Workforce Survey (OWS) 2015.

1.2 Workforce planning

One definition of healthcare workforce capacity is the ability to ensure sufficient staffing levels to accomplish work processes and successfully deliver services to patients, including the ability to meet seasonal or varying demand levels.

The most common objective of workforce planning is to attain a balance between demand for staff and their supply by estimating the future demand for defined services, and trying to ensure that a sufficient (but not excessive) number of appropriately qualified personnel is available to meet this demand.

Workforce planning is often defined as having the *right number*, in the *right place*, at the *right time*, with the *right skills* to provide the *right services*. This demonstrates that optical workforce planning is not just about the number of personnel: it is also about them being geographically distributed to best meet public health needs and about having the flexibility to adapt to meet changing needs. Planning is not solely about new recruits – it must also consider how to develop new skills and new working patterns for those who are already in post (The King's Fund, 2009).

The things that might affect the optical workforce and should be taken into consideration in workforce planning include:

- **An ageing population:** Physiological changes in the eye mean that people are increasingly likely to need vision correction as they grow older, so the healthy older population need access to primary eye care. Added to this, the prevalence of conditions that can cause visual impairment – glaucoma, macular degeneration, cataract, and diabetic retinopathy – all increase with age.
- **Changing gender demographics of the workforce:** Nearly all healthcare professions report a shift in the gender balance of new recruits, with an increase in the number of women. Not only are more women entering the professions, in some professions they are the majority gender or are approaching that point.
- **Flexible working hours:** Millennials (born in the 1980s and 1990s) place greater emphasis than previous generations on maintaining a good work-life balance and this may mean working flexible hours that suit them (Bolton and Houlihan, 2007). Practitioners of older generations might also demonstrate a preference for more flexible working if this becomes more common or established across optical workplaces. In addition, the increased proportion of females in the optical workforce might mean a greater proportion of optical professionals taking maternity leave (of whatever length). However, the introduction of Shared Parental Leave (SPL) and Statutory Shared Parental Pay (ShPP) as well as changes to childcare funding and provision, may impact on working hours per optical practitioner for parents of both genders.
- **Increased specialisation of the workforce:** Since 2004, the Department of Health (DH) has been trying to encourage the delivery of more routine and minor emergency eye care outside hospital settings in community optical practices. The aim is to free up hospital capacity to cope with increasing demand from both the ageing population and new technologies such as treatments for wet age related macular degeneration (The King's Fund, 2009). Optometrists are increasingly involved in community care pathways for conditions like glaucoma and diabetic retinopathy and providing acute eye care services.

However, even taking these factors into consideration, estimating the ideal number of optometrists for a particular population is difficult and contentious (Kiely et al., 2010) as a number of approaches can be used and targets for a health workforce can be established in a number of ways. For example, population-based, need-based, utilisation-based and effective demand-based (International Agency for the Prevention of Blindness, 2015) are included in the summary of most recent optical workforce studies in Section 1.3.

1.3 Optical workforce studies

The UK optical sector as a whole holds various sets of data about the workforce that are useful in understanding the individual optical professions. However, there is neither an individual data source, nor set of sources in combination, that can provide the information necessary to effectively map and model the optical professions as either a collective workforce or individual workforces. This was demonstrated by the findings of a global assessment of eye care resource conducted in 2006, which was able to provide data on ophthalmologists in Europe but concluded that reliable data concerning other cadres of eye care personnel including optometrists was not available for the region, therefore no further analysis could be done in this respect (International Agency for the Prevention of Blindness, 2006).

This means that it is often the remit of professional bodies to conduct workforce studies. The following studies are the most recently completed studies in developed countries. They demonstrate the range of approaches used and highlight some common trends.

A survey of New Zealand optometrists in 2006 (Frederickson et al., 2008) concluded that the workforce was sufficient to meet overall population needs, but a targeted expansion would be needed in the face of expected increasing demand for services. According to registration data, the ratio of optometrists to population was 1:6,291 but survey data revealed that one third of optometrists chose to work part time so data were used to calculate the full-time equivalents and the ratio was adjusted to 1:7,517. The survey found that 53% of respondents were male but the proportion of females had increased over the last 15 years and the average age of female respondents was lower (mean = 34 years) than the average age for males (mean = 46 years) by 12 years.

Around the same time, the former Optometrists Association Australia (OAA), now Optometry Australia, conducted a study to assess the optometric workforce using membership data and government statistics on consultations (Horton et al., 2006). The ratio of full-time optometrists to population was 1:7,016, but regional variations ranged from 1:6,053 to 1:10,521. The OAA concluded that the number of optometrists was adequate for the needs of the Australian population but, like New Zealand, it found considerable changes in the age and gender make-up of the profession. Most females were in their 20s or 30s, while the male optometric population was gradually becoming older. Females comprised 41% of the workforce compared with 12.8% in 1977.

However, a 2009 study commissioned by OAA (Kiely et al., 2010) forecast that a significant oversupply of optometrists would start to be seen in 2016 and increase by 2036, even allowing for a 20% increase in demand for services. The study took place in the context of concerns within the profession about the number of optometry students being trained. The report estimated that the optometric workforce would almost double in size over the next two decades.

Most recently the 2012 National Eye Care Workforce Study of Optometrists in the US (The Lewin Group, 2014a) found that one third of optometrists were female but the proportion rose to over half in those under the age of 40. The average working week was 41 hours and higher among the self-employed with little reported part-time working. The data were used to construct the Eye Care Workforce Model (The Lewin Group, 2014b) which looked at supply and demand in the eye care market. It suggested that there could be as much as 32% excess capacity in the optometry workforce and that there could be an excess supply of 9,100 full-time equivalent (FTE) optometrists by 2025. However, when potential additional demand resulting from the effect of greater insurance cover and minimum essential benefits under the Affordable Care Act were factored in, the excess supply disappeared. Moreover, the model does not take into account changes in technology, epidemiology of eye disease, or possible changes in recruitment to schools of optometry on the basis that these could not be anticipated on current information. Perhaps more than any other study, the US Eye Care Workforce Study demonstrates the intricacies and difficulties of trying to calculate and forecast workforce capacity.

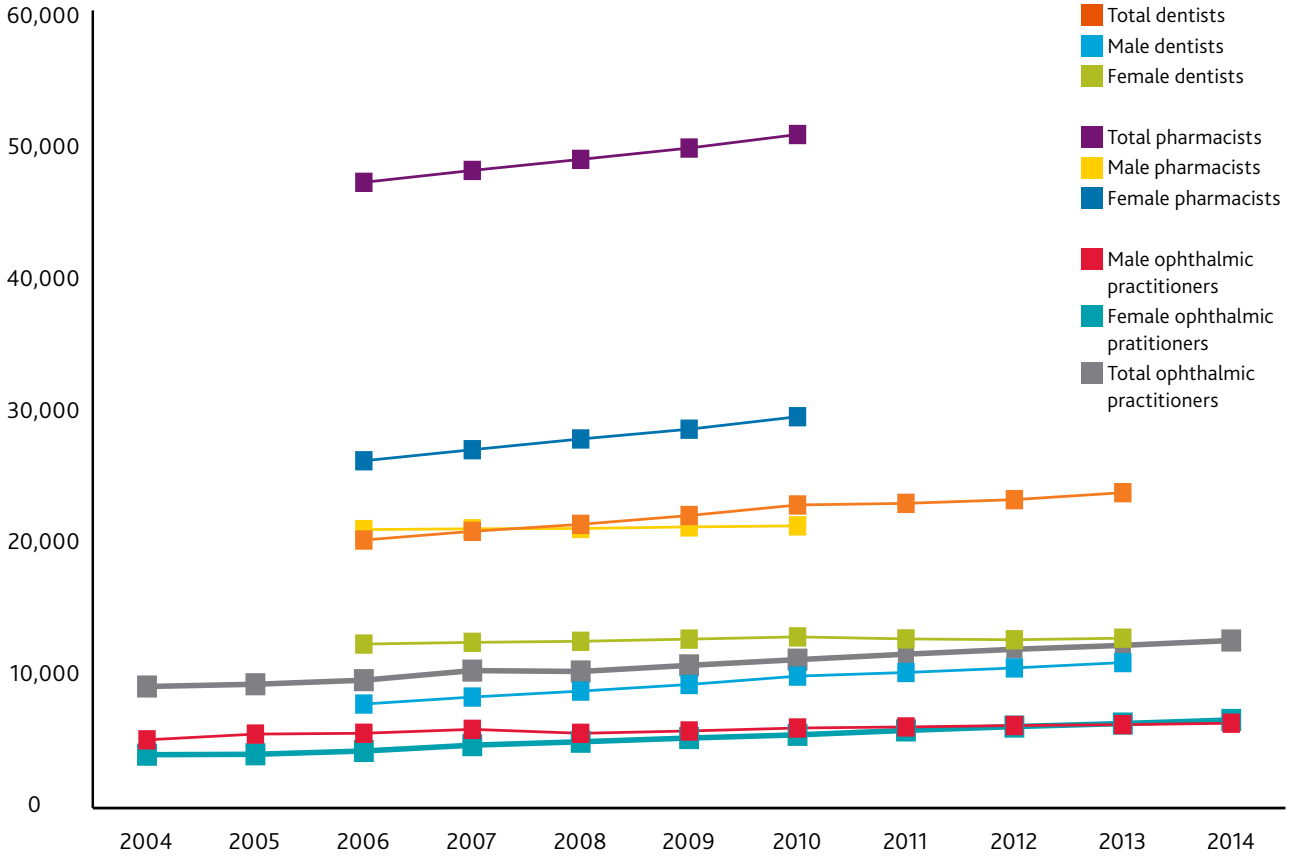
Many developed countries report problems with recruiting and retaining healthcare professionals to work in remote or rural areas. One study that investigated whether the premise was true in the UK was a 2003 survey of 2,070 primary healthcare professionals living in the Scottish Highlands (Richards et al., 2005). The sample did not include optical staff but the sample was otherwise sufficiently diverse to suggest that the findings may be relevant. It found that professionals living in rural areas were more likely than their urban counterparts to have been born, raised and educated outside Scotland.

The first study of the UK optometric workforce, (Alpine and Jack,1979) projected workforce capacity ten years hence based on the number of sight tests that could be undertaken by a full-time optometrist and the amount of dispensing by a full-time dispensing optician (one of the few workforce studies to include dispensing opticians). In 1983, French and Lorcan attempted to look at optometry manpower up to the year 2000 and beyond. At the time there were six UK schools of optometry, recruitment had increased in response to 'the demands of the profession and applicants' and all were near the highest point of recruitment to that point, with an intake of 280 students between them. Using data from optometrist registration numbers, student intakes and sight tests, they concluded that the workforce was on target for the year 2000 but could not be sure beyond that. In their attempt to project future numbers they considered the changing gender demographics of the workforce, predicting that females would represent 40% of the workforce by 2000 and overtake males by 2013. However, they also looked at average working life and explained that while the expected working life of female entrants to the profession tended to exceed that of men, their full-time equivalent working life was substantially shorter at 25 to 26 years compared with 36 to 38 years for men (French and Lorcan 1983).

1.3.1 Optometry in context

How does optometry compare to other health and allied health professions? Figure 1 below shows data for dentists, pharmacists and ophthalmic professionals (optometrists and ophthalmic medical practitioners combined, the vast majority of these are optometrists) in England and Wales. This shows clearly that each of these professions has increased in terms of the total number of professionals. It also demonstrates that while pharmacy and optometry have seen steady increases in the number of women in the professions, this is not true for dentistry. Pharmacy has seen a slightly greater overall increase in the number of women in the profession than optometry.

Figure 1: Dentistry, pharmacy and ophthalmic practitioners in England and Wales (HSCIC statistical publications data)



It is worth noting that the government has mechanisms through which it controls the number of medical and dental student intakes. In 2013, the government issued a consultation on whether to introduce a cap on the number of pharmacy students in the UK; following the consultation, the government decided not to introduce controls. There is currently no instrument for controlling optometry student intakes.

1.4 Optometric Workforce Survey 2010

The College surveyed the optometric profession to gather a clear picture of its form in 2010. Prior to this, there had not been a comprehensive survey of the profession since the manpower surveys of the late 1990s. The 2010 Optometric Workforce Survey (OWS 2010) gathered detailed information about the individual optometrists making up the profession, their patterns of practice, training and experience, career trajectory and future intentions. The College did not publish a report of the OWS 2010, although results from the Survey were presented at three international conferences (College of Optometrists, 2011; 2012a; 2012b).

The 2010 survey was a two-phase study. Phase 1 was a review of existing literature relating to the optometric workforce in the UK. Phase 2 was a questionnaire-based cross-sectional survey of optometrists practising in the UK. The survey population sample was all members of the College of Optometrists (n=9,200), representing 75% of the optometrists registered to practise in the UK (n=12,276). The survey had a response rate of 34% (n=3,122).

1.4.1 Objectives of the Optometric Workforce Survey 2010

In Phase 1 the objectives were:

- to identify gaps in current data relating to the profession;
- to support an appropriately sound tracking of trends within the profession over time; and
- to establish key areas for attention and to inform the development of the survey process and tools.

The objectives of Phase 2 were:

- to develop appropriate methods and tools for gathering data relating to the optometric workforce within the UK on a recurring basis;
- to collect baseline data on socio-demographic characteristics, patterns of practice, training and experience, job satisfaction and future intentions of individual optometrists; and
- to provide a descriptive profile of the profession at that time. Survey data were supplemented by additional data from the General Optical Council (GOC) database.

1.4.2 Main results of the 2010 Optometric Workforce Survey

The main results are listed below.

Age and Gender: The mean age of the participants was 41 years. Women comprised 60.6% of the study participants. There was a significant association between age and gender ($p<0.001$), with 73.5% of respondents under 30 years of age being women, whereas only 45% of respondents over 50 years of age were women.

Ethnicity: 77.1% of respondents described their ethnicity as UK/Irish/Other White ethnicity and 19.5% were of Asian ethnicity.

Family: Overall, 71.6% of respondents were married or in a civil partnership. 45.4% had dependent children, with two children being the average number. 27% of participants had other family members in optometry or an eye care-related occupation or business.

Mobility: 88% of participants were born in Britain. 50% of the participants grew up in large urban areas (population over 100,000). 56% of respondents had moved from the place they grew up to another county or country. Of those who had moved to another county or country, 31.5% moved because of job availability, 27% for further education, and 27% because of family circumstances.

Employment status: Over half (55%) worked full time, 11.5% were self-employed, and 43.5% were employed full time. One third worked part time: 10.4% in a self-employed capacity and 23% employed. 10.5% of respondents were locums.

Distribution of workforce: There were apparently gaps in urban provision in certain areas. The World Health Organization (WHO) set target levels of provision for developing nations of one refractionist per 50,000 population by 2020 (WHO, 2007). The European Council of Optometry and Optics (ECOO) Blue Book 2015 shows that for the majority of developed EU nations, the number of optometrists per 10,000 population (ECOO 2015) is closer to the 1:10,000 previously cited (Holden et al., 2002). While many areas of the UK exceed this average, there were some areas with provision below this level. It is also worth noting that the average for developed countries is derived from data that includes many countries with proportionally greater numbers of ophthalmologists than there are in the UK.

Optometric education: Overall, 93.1% of respondents were trained in the UK.

Education and Continuing Professional Development (CPD): Only 12% of respondents reported having attended a professional conference in the last five years, while 49.8% reported making use of Directorate of Optometric Continuing Education and Training (DOCET) materials. Work commitments (36%) and family circumstances (37%) were reported as being the main barriers to professional development activities. Female optometrists were significantly more likely to report being unhappy with CPD opportunities. Postgraduate education was significantly associated with older male respondents. A higher percentage of male optometrists (27.7% male versus 20.3% female) and those from older age groups reported that they had postgraduate education (33.5% in the age group 50 and over versus 14.9% of those under 30).

Professional appraisal: 39.3% of respondents reported having had an appraisal in the last 12 months.

Internet access: 64.5% of respondents reported having access to the internet at work. 92% of responding optometrists had internet access at home.

Income: 24% of respondents earned less than £30,000; 24% earned £30,000 to £40,000; and 24% earned £40,000 to £50,000. 28% earned more than £50,000. The data collected indicated that there may be some disparity in income between male and female optometrists, and that this might be an area for further investigation. There was no evidence of significant inequality in relation to geographic location or ethnicity.

Future plans: 43.8% of respondents said that they hoped to reduce their working hours or leave optometric practice or retire in the next five years. Female optometrists were significantly more likely to decrease their contribution to the workforce in the next five years than males. Age was directly linked to the likelihood of decreasing contribution, with each successive age group more likely to decrease their contribution to the workforce.

Professional development in the workplace: Those who reported barriers for professional development said that the main barriers were: family circumstances (37%, n=200); financial constraints (11%, n=59); and work commitments (36%, n=194).

Special clinical interests: 58.7% (n=1,832) of the survey respondents indicated a special clinical area of interest or subspecialty within optometry.

Job satisfaction: Respondents working in hospitals and independent practices were more likely to report being satisfied with the recognition that they received for their work. There was also variation between optometrists working in urban areas (more likely to be satisfied with the recognition received) and rural or semi-urban areas (less likely to be satisfied with recognition). Optometrists working in hospitals and independent practices were also more likely to report being satisfied with the variety in their jobs, as were optometrists working in urban areas.

1.4.3 Conclusions

As well as providing information about the key basic characteristics of the optometric workforce, the OWS 2010 illustrated how the distribution of optometric practices across the UK could point to some potential inequalities of access to optometrists and thus to primary eye care services.

The primary benefit of the OWS 2010 was that it provided a baseline data set and survey protocol that can be repeated periodically to build a longitudinal data set that will support investigations of trends within the profession over longer periods. This is vital for the development of the profession and for workforce planning and future service provision and design.

1.4.4 Key recommendations arising from the OWS 2010 were:

- There should be further investigation into the distribution of optometric services to explore possible inequalities of access to primary eye care services and to examine whether the distribution of or access to optometric services has any link to eye health related outcomes in underserved populations.
- Additional work is needed to gather information about appraisal and CPD, with particular attention to the impact of appraisal including/excluding clinical aspects of the optometrist's role.
- There should be further investigation into the perceptions and attitudes of optometrists toward the profession and their future contribution to the optometric workforce should be considered.
- The Optometric Workforce Survey should be repeated to gather data to support trend analysis.

1.5 Optical Workforce Survey 2015: aim and objectives

The aim of the OWS 2015 was to act on the final recommendation from the OWS 2010, and on this occasion to extend the study to include dispensing opticians in order to ensure a more complete picture of the primary eye healthcare workforce.

The objectives of the OWS 2015 were:

1. to describe the characteristics of the optometrist and dispensing optician workforces;
2. to measure changes in the optometric workforce since the OWS 2010;
3. to assess the potential and limitations of existing data to quantify the current optometrist and dispensing optician workforces; and
4. to explore factors that could impact on future workforce capacity.

2 Methods

The Optical Workforce Survey 2015 had two elements: 1) questionnaire-based surveys of optometrists and dispensing opticians, supported by 2) interviews with a sample of stakeholders from the optical sector to provide further insights into issues raised in the questionnaires.

2.1 Survey questionnaires

A structured questionnaire for optometrists was designed using a modified form of the OWS 2010 questionnaire. This was adapted to create a version suitable for dispensing opticians. The questionnaires were revised following review by the OWS 2015 Advisory Group. The questionnaires were then piloted by the College with a group of optometrists and by ABDO with a group of dispensing opticians. This resulted in a small number of further revisions.

Both versions of the questionnaire covered the following areas:

- education, training and professional development
- workplace and clinical profile
- job satisfaction
- workforce
- personal profile
- geography
- family
- health.

A mixture of question and response styles was employed, mainly fixed choice or multiple choice questions and open questions requiring free text responses.

2.2 Survey samples

The sample for the optometrist survey was 2,000 members of the College, randomly selected without any stratification. The initial sample was reviewed to exclude members over the age of 75 on the basis that they were unlikely to still be practising. Removed names were replaced by additional random sampling until a final list of 2,000 had been achieved.

The membership of ABDO was used for the survey of dispensing opticians. ABDO decided not to use a sampling strategy, preferring a census approach whereby all fully qualified members were invited to take part.

2.3 Survey procedures

The invitation to participate in the questionnaire-based survey was initially sent to optometrists in December 2014 by email with an electronic link to complete the questionnaire online. A reminder email was sent two weeks later to non-respondents. Remaining non-respondents were then sent a hard copy questionnaire by post along with a prepaid postage return envelope. Optometrists who had not provided the College with an email address were sent a hard copy questionnaire in the first instance.

ABDO did not send a direct invitation to each member; the invitation to participate in the survey was issued in the ABDO electronic newsletter with a link to the online questionnaire. The questionnaires were completed anonymously so there was no method of checking which members had responded; unlike the optometrist survey, non-respondents were not sent a hard copy version of the questionnaire.

The response rates for both groups are presented in Section 3.

2.4 Stakeholder interviews

Interviews with stakeholders were planned to collect qualitative data that would provide background on optical workforce issues and to provide supplementary in-depth information which could not be captured using structured questionnaires. The interview format was semi-structured to encourage interviewees to talk about optical workforce issues from their stakeholder perspective and using personal experiences. A topic guide was developed to assist the process and covered the following areas:

- factors relevant to reviewing and planning the optical workforce
- changes to the optical workforce
- motivation to enter, and stay in, an optical sector profession
- expectations and levels of job satisfaction across the professions
- best and worst things about being an optometrist or dispensing optician
- strengths and weaknesses of the optical workforce.

Interviews were conducted face-to-face at a time and venue that was suitable for the interviewee. Interviews were audio recorded, then transcribed to ensure complete data capture. All but two of the interviews were conducted by an independent researcher contracted to work on the study; the remaining interviews were conducted by College Research Team members.

2.5 Stakeholder sample

Interviews were conducted with optical workforce practitioners and employers, students and academic representatives of the universities providing optometry courses, professional bodies, and individuals who could provide a perspective from one of the four nations of the UK. Many interviewees were able to provide insights from multiple perspectives as shown in Table 1. For example, four individuals were invited to be interviewed to provide insights into the optical workforce primarily from the perspective on one of the devolved nations, but another nine stakeholders who were primarily invited in a different stakeholder context were also in a position to provide an additional devolved nation's perspective.

Table 1: Interview stakeholder perspectives

STAKEHOLDER GROUP	PRIMARY PERSPECTIVE	SECONDARY PERSPECTIVE
Academic	8	0
Devolved nations	4	9
National employer	9	3
Optometrist or dispensing optician	8	6
Professional body	5	3
Student	7	0
TOTAL	**41**	**21**

Most interviews were conducted individually. The exceptions were with some of the optometry students who opted to be interviewed in pairs, and two optical companies which included additional personnel in the interview. A total of 36 interviews were conducted with 41 stakeholders.

3 Results

This section provides the results of the optometrist and dispensing optician questionnaires combined with applicable data from the interviews to provide context. Results from both professions are presented together whenever appropriate to facilitate comparison.

3.1 Response rate

Optometrists: As described in Section 2.2, a random sample of 2,000 College members received an email invitation to complete the questionnaire online, or a hard copy questionnaire if they had not provided the College with an email address. Non-respondents to the email invitation were sent a hard copy of the questionnaire by post.

The online questionnaire elicited 314 responses, a response rate of 15.7%. A further 327 postal questionnaires were returned, bringing the combined response rate to 641 questionnaires (32.05%).

The online questionnaire contained a small number of forced response questions; if the participant did not answer one of these questions they were unable to progress to the next question. The first forced response question was Question 25 at the beginning of the Workplace and Clinical Profile section. Forty-three optometrists dropped out of the survey at some point, most of them at Question 25. The number of optometrists who continued to the end of the online questionnaire was 271; added to the 327 postal respondents, the total number of questionnaires completed to the end was 598 (29.9%).

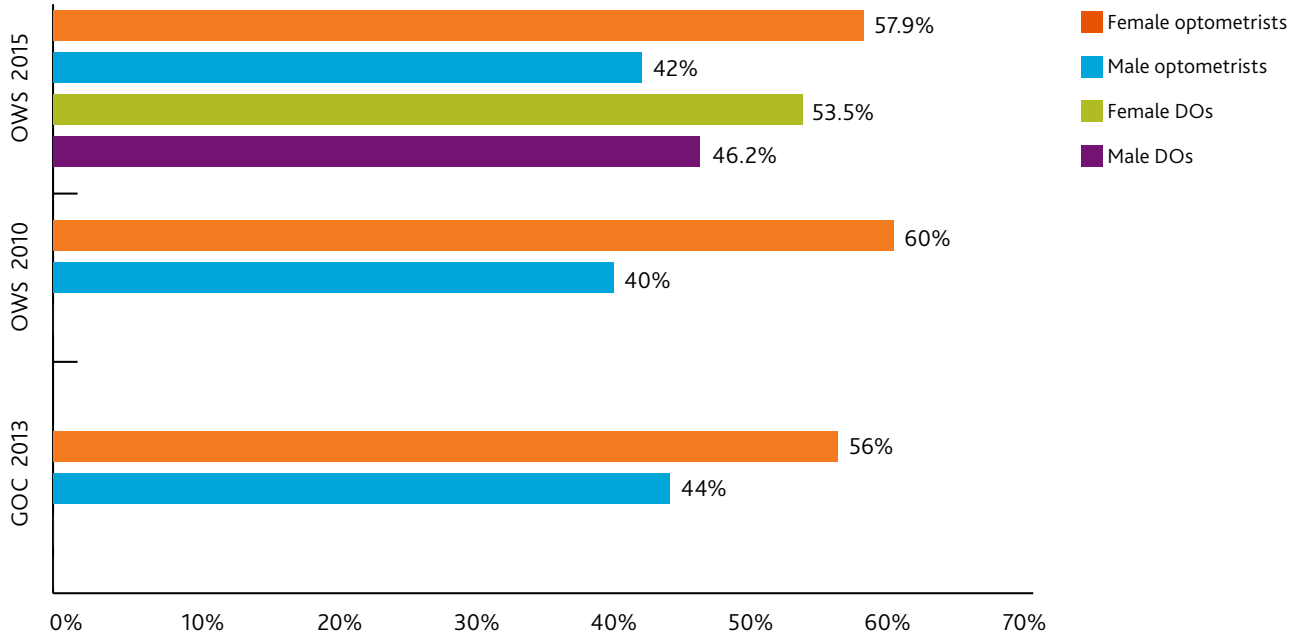
Dispensing opticians: The questionnaire was distributed by email to all ABDO members (8,183 total, including associate members, students, and overseas members) with an invitation for all fully qualified members to participate (fully qualified was estimated to be 5,700 dispensing opticians). As with the optometrist survey, the questionnaire contained a number of forced choice questions. While 577 dispensing opticians started the questionnaire (10.1%), 124 dropped out at the first forced choice question (Question 25) reducing the response rate for the full questionnaire to 453 (7.9%).

There is some missing data as respondents were able to skip a number of questions. Results are primarily reported using percentages to enable comparison between professions but the total number of responses to each question is provided (n).

3.2 Personal characteristics

3.2.1 Gender: The majority of survey respondents in both professions were female: 57.5% of optometrists and 53.5% of dispensing opticians. Figure 2 provides a comparison of optometrist gender data with data from the OWS 2010 and 2013 GOC data; similar comparative data on dispensing opticians was not available. The gender balance within the optometrist questionnaire is within 2% of the GOC data on all UK registrants, suggesting that the sample was representative in terms of gender.

Figure 2: Gender distribution (OWS 2015 optometrists n=578, dispensing opticians n=411)[1]



[1] Within the OWS 2015 there was also one transgender optometrist respondent and one transgender DO respondent, not visible on Figure 2 due to scale.

3.2.2 Age: Optometrists (n=569) were aged between 22 and 74 years (mean = 45.33, standard deviation = 12.94). Dispensing opticians (n=384) were aged between 21 and 72 years (mean = 47.54, standard deviation = 10.73).

Table 2 shows how age was distributed between genders. Up to the age of 50, the majority of optometrists in every five-year age band were female. Over the age of 50, the majority of respondents were male. A similar pattern was evident among dispensing opticians: up to the age of 45 the majority were female, after age 45 the majority of respondents were male.

Table 2: Age and gender distribution

	OPTOMETRISTS			DISPENSING OPTICIANS		
AGE	**NUMBER**	**FEMALE**	**MALE**	**NUMBER**	**FEMALE**	**MALE**
25 years and under	45	77.8%	22.2%	6	66.7%	33.3%
26 – 30 years	52	82.7%	17.3%	20	55.0%	40.0%
31 – 35 years	60	60.0%	20.5%	39	79.5%	20.5%
36 – 40 years	51	66.7%	33.3%	40	70.0%	30.0%
41 – 45 years	54	74.1%	25.9%	38	78.9%	21.1%
46 – 50 years	77	62.3%	36.4%	77	42.9%	57.1%
51 – 55 years	83	47.0%	53.0%	64	45.3%	54.7%
56 – 60 years	75	44.0%	56.0%	55	45.5%	54.5%
61 – 65 years	45	28.9%	71.1%	29	31.0%	69.0%
Over 65 years	23	21.7%	78.3%	10	10.0%	90.0%
TOTAL[2]	**565**	**57.7%**	**42.1%**	**378**	**53.2%**	**46.6%**

[2] Not shown in table are one transgender optometrist respondent and one transgender DO respondent.

3.2.3 Family circumstances: Around three quarters of respondents were married or in a civil partnership; 73.3% of optometrists (n=561) and 88.3% of dispensing opticians (n=401). More than one third had dependent children (aged under 16 years or aged 16 to 18 years and in full-time education); 39.5% of optometrists (n=574) and 36.2% of dispensing opticians (n=409).

3.2.4 Ethnicity: Survey participants were asked to indicate their ethnicity. Table 3 shows that a large majority of respondents identified themselves as English/Scottish/Welsh/Northern Irish/Irish/Other White[3]. A total of 88 optometrists (15.7%) but only 18 dispensing opticians (4.5%) said they were Asian or Asian British and less than 2% of respondents identified themselves as Black/Black British, mixed ethnicity or other ethnicity. Just over two thirds of the Asian or Asian British optometrist respondents were female (n=59, 68.6%), a slightly higher proportion of females than across the whole sample.

Ethnicity data on optometrists is explored further in this report. However, the small proportion of dispensing opticians from a non-UK/Irish/Other White background in the sample, 24 respondents (6%), is too small to explore ethnicity as a factor in analysis of subsequent data in this section.

Table 3: Ethnicity

	OPTOMETRISTS		DISPENSING OPTICIANS	
ETHNICITY	**NUMBER**	**%**	**NUMBER**	**%**
Asian or Asian British	88	15.7%	18	4.5%
Black or Black British	2	0.4%	4	1.0%
English/Scottish/Welsh/Northern Irish/Irish/Other White	463	82.7%	378	94.0%
Mixed ethnicity	4	0.7%	1	0.2%
Other	3	0.5%	1	0.2%
Total responses	560	100%	402	100%
No response	81		51	
TOTAL	**641**		**453**	

Interview data on personal characteristics: Most of the interviewees commented on the changing gender demographics of the optical professions, explaining that the professions were male dominated a generation ago, a situation that had gradually changed until females now formed the majority of the professions. Their assertion was that this was particularly relevant to workforce planning because of the perception that women are more likely than men to reduce their working hours if they become parents. Therefore, if the number of optometrists remained static, but women represented a greater proportion, overall capacity may be reduced because there would be fewer optometrists working full time.

Interviewees raised a second demographic factor with potential to impact on workforce capacity: the proportion of optometrists of Asian ethnicity. Many interviewees thought that optometrists of Asian ethnicity could be less likely to move away from their families and communities, which could have a net effect on the geographic mobility of the workforce. Although this perception was general in nature, it was confirmed in principle by the small proportion of interviewees who were of Asian ethnicity.

[3] This group includes options for 'English/Welsh/Scottish/Northern Irish' and 'Irish' which preceded 'any other White background' in the list but did not specifically include the word 'White' as part of the descriptor.

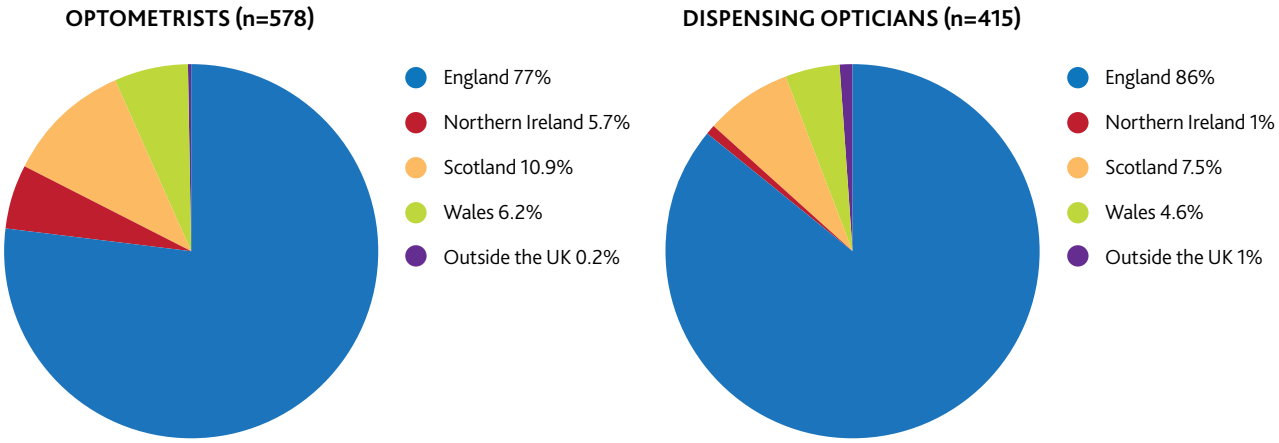
3.3 Geographical data

3.3.1 Country of residence: Only one optometrist and four dispensing opticians said that they currently lived outside the UK. Reflecting the general population spread across the four nations, the majority of respondents lived in England: 77% of optometrists and 86% of dispensing opticians. The actual numbers of respondents from the other nations were as follows:

- Northern Ireland: 33 optometrists and 4 dispensing opticians
- Scotland: 63 optometrists and 31 dispensing opticians
- Wales: 36 optometrists and 19 dispensing opticians

These numbers were too low to allow for measures of statistical significance (and any findings might be due to chance), which therefore only allowed for a limited statistical analysis of differences between the four nations.

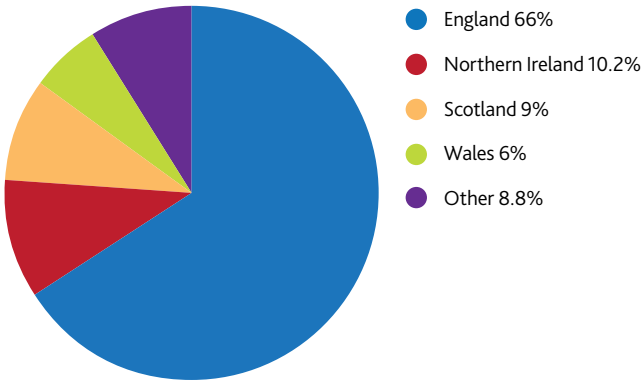
Figure 3: Country of residence



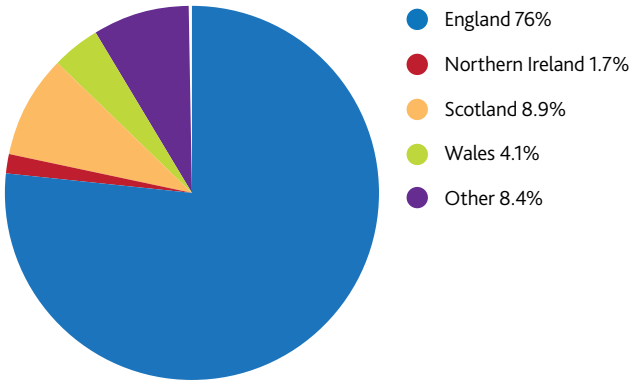
3.3.2 Country of birth: Less than nine per cent of respondents in both groups were born outside the UK. Two thirds of optometrists and three quarters of dispensing opticians were born in England (Figure 4).

Figure 4: Country of birth

OPTOMETRISTS (n=580)



DISPENSING OPTICIANS (n=416)



A comparison of the data in Figure 3 and Figure 4 revealed that a number of respondents had moved to another country since birth. Further analysis explored to what extent movement was between countries in the UK (Table 4). The highlighted cells are respondents who lived in their country of birth.

- The numbers of respondents from Northern Ireland, Scotland and Wales were small in comparison with the numbers from England, particularly among dispensing opticians, so care must be taken when drawing conclusions. However, a number of things are noticeable, for example: 44% of optometrists born in Northern Ireland now lived in either England or Scotland.
- One third of optometrists born in Wales now lived in England.
- 92% of responding optometrists born outside the UK now lived in England.
- Similar trends appear among dispensing opticians, albeit the actual numbers are much smaller. The main difference is the percentage of dispensing opticians born in Scotland who now lived in England was 33.3%, twice the percentage of optometrists (16.7%) who had made the same move.

Table 4: Comparison of survey respondents' country of birth and country of residence

	COUNTRY OF RESIDENCE – OPTOMETRISTS				
COUNTRY OF BIRTH – OPTOMETRISTS	**ENGLAND**	**NORTHERN IRELAND**	**SCOTLAND**	**WALES**	**OTHER**
England	357	0	12	12	1
Northern Ireland	21	33	5	0	0
Scotland	8	0	43	0	0
Wales	12	0	0	23	0
Other	47	0	3	1	0
TOTAL	**445**	**33**	**63**	**36**	**1**

	COUNTRY OF RESIDENCE – DOs				
COUNTRY OF BIRTH – DOs	**ENGLAND**	**NORTHERN IRELAND**	**SCOTLAND**	**WALES**	**OTHER**
England	305	0	5	7	0
Northern Ireland	2	4	1	0	0
Scotland	12	0	24	0	1
Wales	5	0	0	12	0
Other	31	0	1	0	3
TOTAL	**355**	**4**	**31**	**19**	**4**

3.3.3 Geographical movement between childhood and current employment: In an effort to assess the extent to which people moved between leaving school and their current work location, respondents were asked whether or not they had grown up in the area where they currently worked. If they had moved, they were asked if this was to a different county or to a different country and the main reason for moving.

Figure 5 shows that more than a third of optometrists (34.9%) grew up and currently worked in the same city or county. The percentage was higher among dispensing opticians (42.9%). Just under half of respondents in both groups had moved to a different county in the same country. However, they were not asked about the actual distance so it is possible that some of them moved to a neighbouring county and may not have moved far in terms of miles.

Figure 5: Comparison of where people grew up and where they currently work

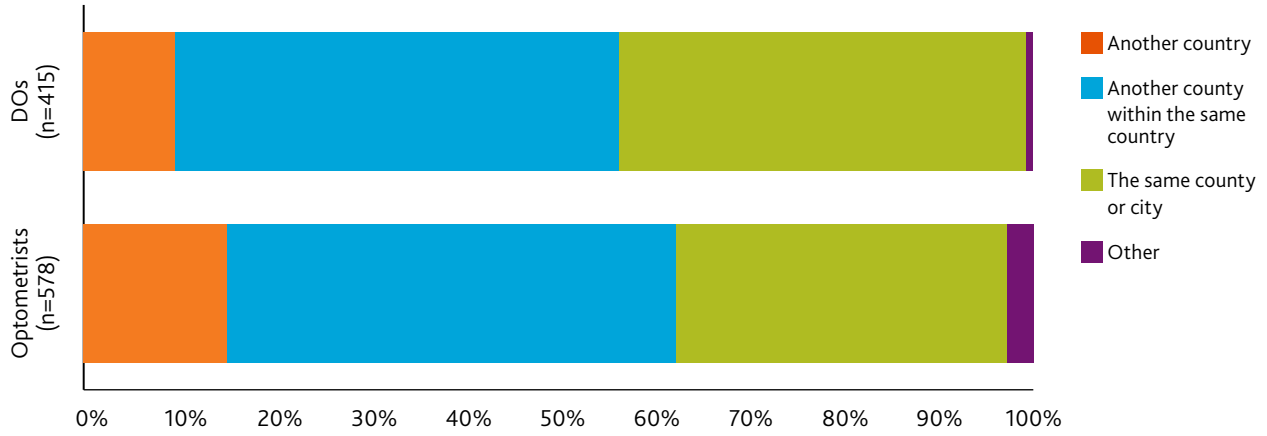
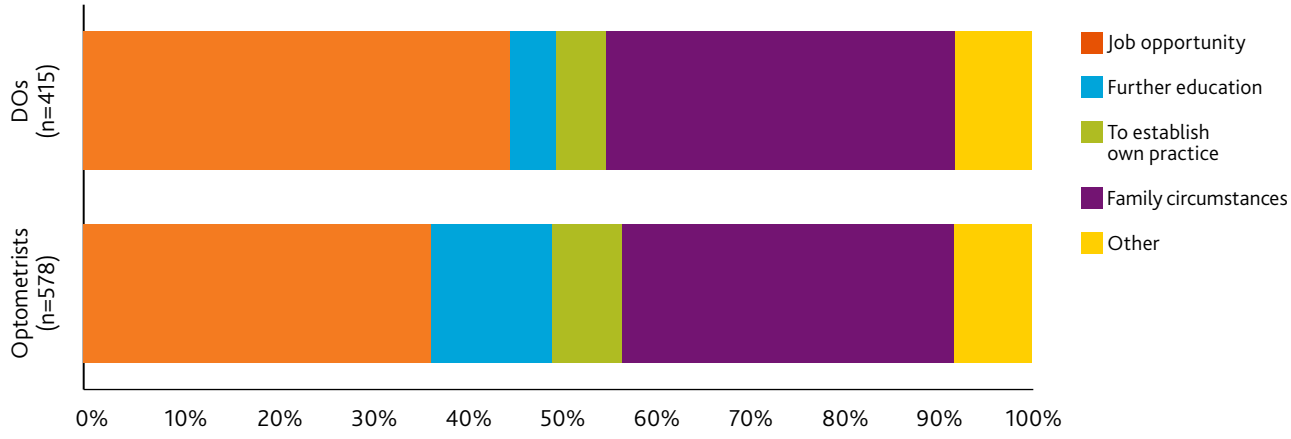


Figure 6 shows the main reason for moving to another county or to another country. Family circumstances were cited by 35% of optometrists and 37.2% of dispensing opticians. Professional reasons – a job opportunity or to establish a new practice – were cited by half of dispensing opticians, but slightly fewer optometrists (43.9%). No reason was given by 46 optometrists and 16 dispensing opticians.

Figure 6: Reason for moving to another county or another country



3.3.4 Interview data on distribution of workforce:

One consideration in workforce analysis is distribution of the workforce: are there areas where there may be under- or oversupply of professionals, and if so, why?

All the interviewees representing large optical companies and some from the devolved nations said there were areas of both under- and oversupply of optometrists although there was some variation in the areas named. The main areas of undersupply identified were South West England, Kent, Cumbria, North East England and the Scottish Borders, and Scotland north of the central belt of Edinburgh to Glasgow. East Anglia was cited as an area where there had been difficulties in recruiting optometrists, but this had eased in recent years following the introduction of optometry courses at Anglia Ruskin University in 1998. Interviewees noted the introduction of optometry at the Plymouth University School of Health Professions three years ago and hoped that this would have a similar effect on supply in the South West, but the impact was yet to be felt.

Conversely, they thought that competition for jobs was strongest in areas surrounding the schools of optometry. The prevailing explanation for this was that the majority of students applied to a university that was not far from their parental home and that this was usually for financial and/or cultural reasons. It was noted that an increasingly large proportion of optometry students were of Asian ethnicity and the tendency was for them either to remain at home while studying or, if they left home, to study at a university within easy travelling distance of home.

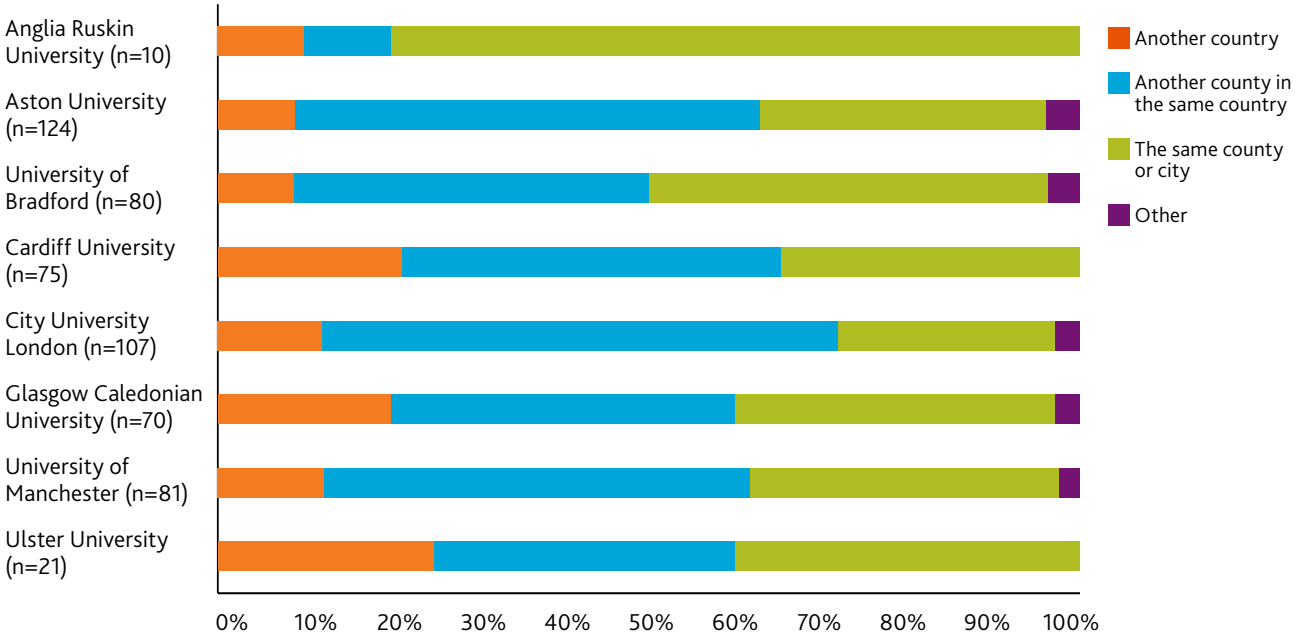
With the exception of contact lens opticians, where there was thought to be a general shortage of expertise, the interview data did not suggest either a general undersupply or oversupply of dispensing opticians. The explanation given for this was that many dispensing opticians started working in optical practice as clinical assistants or administrative staff and were supported by employers when they decided to train as dispensing opticians. Employers could, therefore, meet their staffing requirements by encouraging existing staff to undertake training. The nature of training for dispensing opticians, based on distance learning and block release of time for study modules, meant that mature students could train as dispensing opticians and the profession therefore attracted people from a wide range of ages and backgrounds, whereas most optometrists tended to enter undergraduate education straight from school.

To explore geographical factors and the extent of workforce mobility, the questionnaires asked where people were born, where they trained, where they lived, where they worked now and their main reasons for moving.

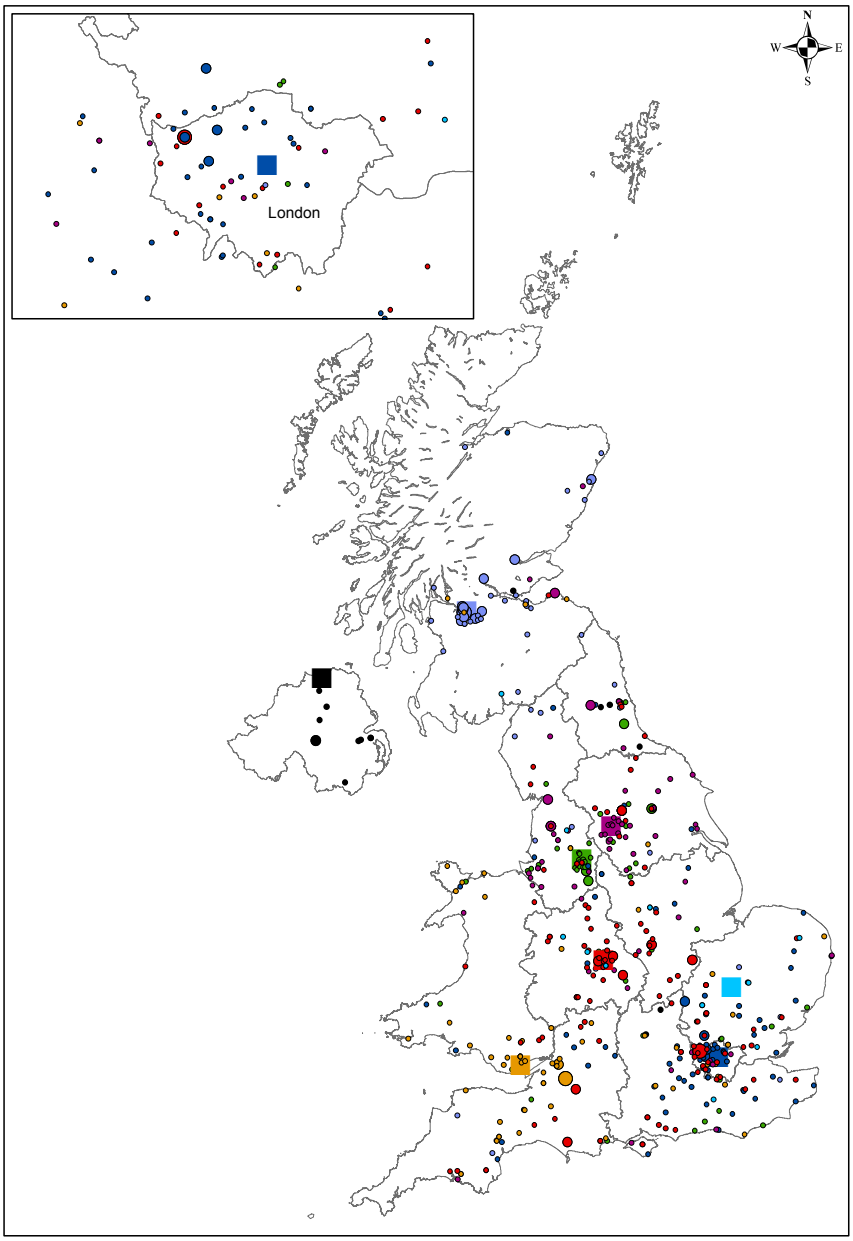
Interview data suggested that many optometry students chose to go to university in a location close to their parental home. Questionnaire data compared where respondents had studied in relation to where they grew up, and to their current place of work, to look for any regional variations.

At the time of the survey (December 2014) there were nine universities in the UK offering GOC-approved undergraduate optometry programmes but one of them, Plymouth University, was launched in 2011, and, therefore, only had its first intake graduate in 2014, so the data in Figure 7 is from eight universities. The bars compare the percentages of optometry students for each university, not the numbers.

Figure 7: University comparison of where optometrists grew up and where they currently work



Map 1: All optometry schools in the UK and graduate destinations by number of graduates



- Anglia Ruskin University
  - 1 Graduate
- Aston University
  - 1 Graduate
  - 2 Graduates
  - 3 Graduates
- University of Bradford
  - 1 Graduate
  - 2 Graduates
- Cardiff University
  - 1 Graduate
  - 2 Graduates
  - 3 Graduates
- City University
  - 1 Graduate
  - 2 Graduates
- Glasgow Caledonian University
  - 1 Graduate
  - 2 Graduates
  - 3 Graduates
- University of Manchester
  - 1 Graduate
  - 2 Graduates
- Ulster University
  - 1 Graduate
  - 2 Graduates
- College administrative regions

A number of findings are worth considering in the light of interview data:

- Anglia Ruskin University had the highest percentage of optometry graduates (80%) who worked in the same city or county where they grew up, however, it should be noted that this is based on data from just 10 graduates of the university.
- The University of Bradford had the next highest percentage of students who worked in the same city or county where they grew up (46.2%) and this was based on a larger sample of 80 respondents.
- There were responses from 107 graduates from City University London: only a quarter said they worked in the same city or county where they grew up, but it is worth bearing in mind that the area around Greater London within the M25 circuit includes a number of counties, so moving into another county, as nearly 60% had, might mean moving a relatively short distance.
- Interviewees in Scotland talked about the difficulties of recruiting optometrists outside the central belt of Scotland (Glasgow to Edinburgh) and that this reflected a similar pattern in terms of student recruitment. However, the questionnaire data shows that 40% of Glasgow Caledonian University graduates worked in a different county and 20% worked in a different country to the one where they grew up.
- A quarter of Ulster University graduates worked in a country that was different from the one where they grew up.

Although the qualitative data suggested that many students studied close to home, this was not the case for all students. It is worth noting, for example, that a proportion of higher education students are overseas students. Furthermore, students may not necessarily gain a place at their first choice university, so what were the motivations behind their patterns of movement? This question cannot be answered from the survey data. However, interview data suggested that the location of a student's pre-registration placement could be a contributing factor to where they eventually worked. Interviewees across all stakeholder groups explained that many students seek a pre-registration placement close to the parental home as this provides them with financial and family social support which helps them to cope with the demands of the pre-registration year.

Another factor influencing pre-registration placements is a previous work placement in the same practice or at another practice with the same company. Questionnaire data on respondents' first post following GOC registration as a fully qualified optometrist showed that nearly half of optometrists (47.2%) continued to work at their pre-registration practice and another 21.1% transferred to another practice with the same employer. The Optical Confederation annual publication, 'Optics at a Glance 2014', reported that in 2013–14, according to data provided by the College of Optometrists, 84% of pre-registration training places for optometrists were provided by the major optical businesses (Optical Confederation, 2015).

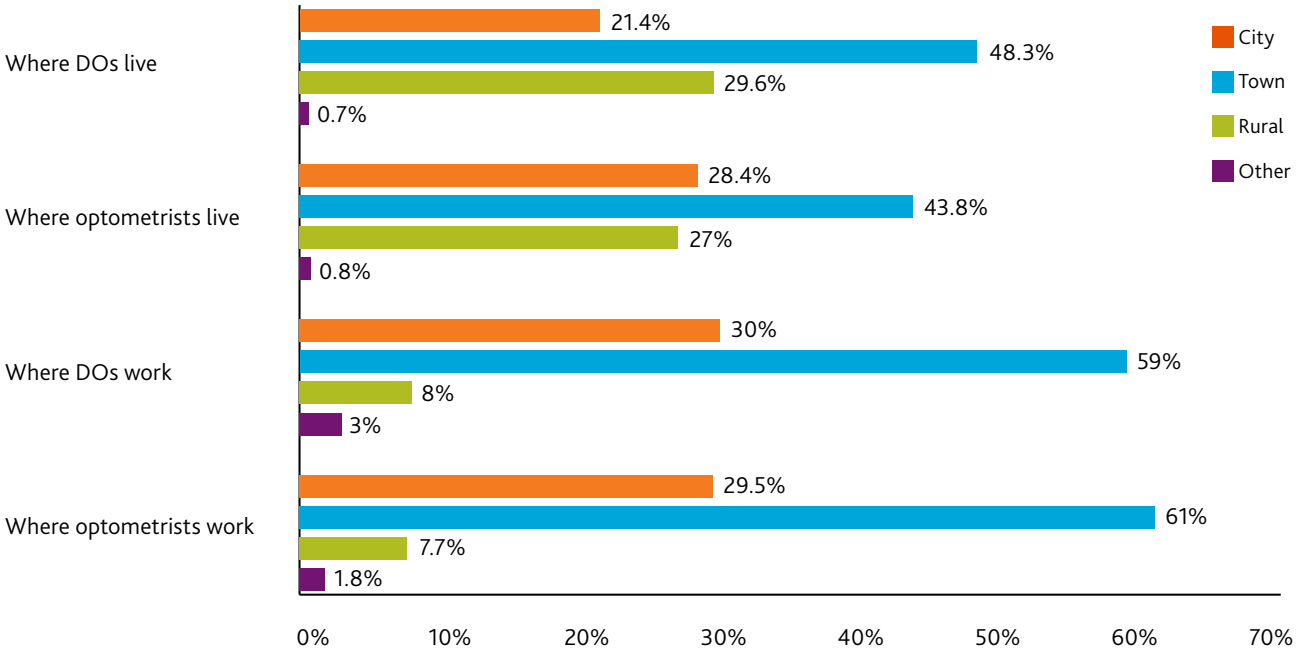
A higher percentage of dispensing opticians continued to work at the same practice following GOC registration as a fully qualified dispensing optician (74.2%), and 7.8% transferred to another practice with the same employer. As previously discussed, there was a perception that many dispensing opticians entered the profession following previous work in the optical sector, usually with sponsorship from their employer, so comparing data on where they were born, where they studied, and where they currently worked has less relevance to workforce planning. Further maps in Appendix 3 allow distribution patterns for individual university optometry departments to be examined.

3.3.5 The type of location where respondents live and work:

Figure 8 shows a simple classification of the type of location where respondents lived and worked: rural, town or city. More than a quarter of respondents lived in a rural setting. The main difference between professional groups compared by residential location was that a higher percentage of optometrists lived in a city (28.4% compared with 21.4% of dispensing opticians), while the situation was reversed in towns, with slightly more dispensing opticians living in towns (48.2% compared with 43.8% of optometrists).

As might be expected, when many optometrists and dispensing opticians work alongside each other in practices there was very little difference between professional groups in terms of work location. Around 60% of both groups worked in a town and around 30% in a city.

Figure 8: The type of location where optical sector professionals live and work



Respondents provided information about the distances between their residence and place of work. For optometrists, the distance ranged from 0 miles (the residence was in the same building as the practice) to 567 miles; the average mean was 15.28 miles, but the standard deviation was 34.5 miles, because of the small number of respondents (6) who lived more than 100 miles from their primary place of work. Four fifths (80.2%) lived within 20 miles, more than half (58.2%) lived within 10 miles and 38.2% lived within 5 miles of their workplace.

For dispensing opticians, the distance ranged from 0 miles to 147.5 miles; the mean was 13.3 miles, but the standard deviation was 16.25 miles, due to a small number of dispensing opticians living more than 50 miles from their primary workplace. The mode (10 miles) or median (9 miles) is a better indicator of the average distance. Very much like optometrists, four fifths of dispensing opticians (82%) lived within 20 miles, 60.1% lived within 10 miles and 38.7% lived within 5 miles of their workplace.

3.4 Work profile

The questionnaires looked at work patterns in terms of employment status, primary role, any additional roles, primary work base, number of hours worked and income.

3.4.1 Employment status: Table 5 summarises respondents' general employment status with regard to whether they were employed or self-employed and whether they worked full time or part time. Results were stratified according to gender to highlight differences.

Table 5: General employment status

	OPTOMETRISTS				DISPENSING OPTICIANS			
EMPLOYMENT STATUS	**NUMBER**	**%**	**FEMALE %**	**MALE %**	**NUMBER**	**%**	**FEMALE %**	**MALE %**
Employed full time	235	39.4%	56.4%	43.6%	244	53.9%	50.9%	49.1%
Employed part time	112	18.8%	77.8%	21.3%	82	18.1%	80.5%	19.5%
Self-employed full time	118	19.7%	24.3%	75.7%	84	17.0%	23.4%	75.0%
Self-employed part time	102	17.1%	72.7%	27.3%	30	6.6%	62.1%	37.9%
Retired	0	0%	0%	0%	2	0.4%	50%	50%
Unemployed	0	0%	0%	0%	3	0.7%	33.3%	67.7%
Other	4	0.6%	50%	50%	2	0.4%	83.3%	16.7%
Mix of employed and self-employed	26	4.4%	80%	20%	13	2.9%	58.3%	41.7%
TOTAL	**597**	**100%**	**57.8%**	**42%**	**453**	**100%**	**53.5%**	**46.2%**

Dispensing opticians were less likely to be self-employed than optometrists: 23.6% compared with 36.8%. Conversely, 72% of dispensing opticians overall were employed, i.e. employees, compared with 58% of optometrists.

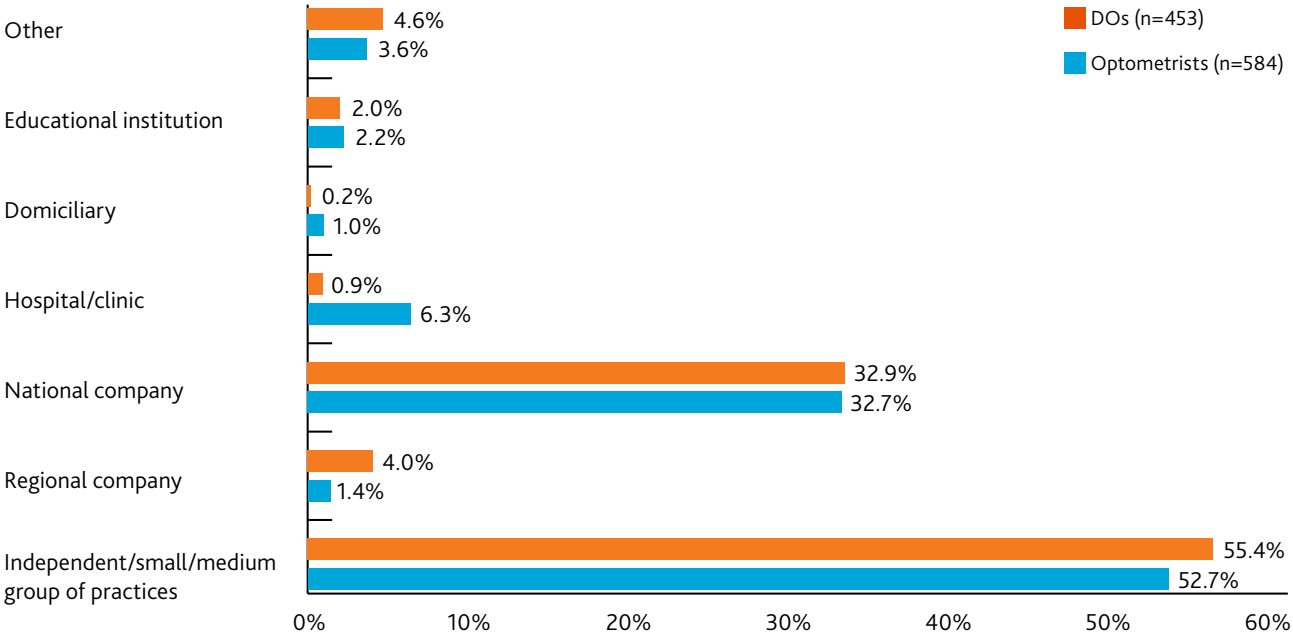
There were similar differences between professional groups in terms of full-time or part-time working: 70.9% of dispensing opticians said they worked full time compared with 59.1% of optometrists.

With the exception of the category of 'employed, full time' there were noticeable gender differences. For example, in both professional groups males represented 75% of respondents who were self-employed and working full time even though men comprised less than half of all respondents. Females represented the greatest percentages of part-time workers, both employed and self-employed, across both professional groups.

Further investigation revealed that one third of optometrists (33.2%) and a quarter of dispensing opticians (24.3%) were practice owners or franchisees.

3.4.2 Primary roles: Questionnaire respondents were asked to identify what they considered to be their primary (main) role from a list of 25 options. Data on primary roles were reclassified to generate a list of work bases as shown in Figure 9. More than half of respondents worked in independent practice in single practices or a small/medium sized group of practices. Just under a third of both optometrists and dispensing opticians worked for a national company.

Figure 9: Primary work base



Anecdotally, it is known that many optical professionals work in more than one role or more than one setting so participants were asked about any additional roles. Among those who said they had an additional role (252 optometrists and 163 dispensing opticians), over 80% had one additional role and the rest had between two and four additional roles. The most common additional roles were locum posts or working with professional bodies such as Local Optical Committees (LOCs).

3.4.3 Locum practitioners: Further investigation of role and employment status revealed that 9.1% of dispensing opticians and 17.5% of optometrists worked primarily as locums. This was a substantial increase from the OWS 2010, which found that 10.5% of optometrists were locum practitioners. This finding supported qualitative data provided by employer stakeholders who thought that an increased number of optometrists seemed to prefer locum work to regular employment. While the level of remuneration was thought to be a factor, locum work as a lifestyle choice was put forward as equally, if not more, influential. Another suggestion was that newly qualified optometrists who could not find employment in their preferred location sought work as locums in the hope of finding a permanent position later.

Interviewees said that the best things about working in an optical profession included the opportunity of working in a variety of roles and the flexibility to work the number of days and the number and type of hours that suited the individual.

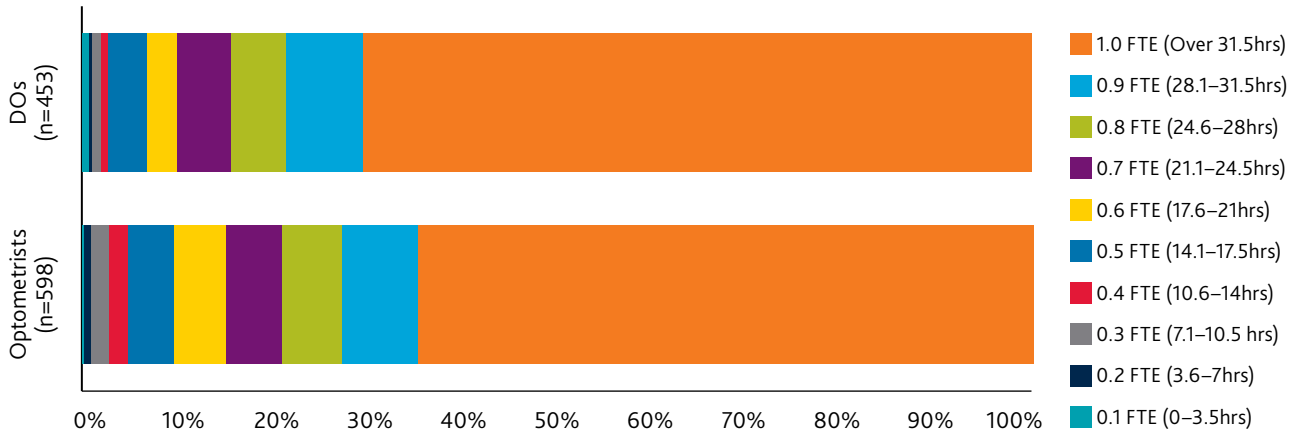
Employer stakeholders were concerned at the apparent increase in the number of optometrists opting to work as locum practitioners because of the impact on patient care continuity and, potentially, on professional standards. In particular, it was felt that newly qualified optometrists should gain experience as employees before becoming locum practitioners in order to build up their post-registration experience.

Section 3.5.2 reports questionnaire data on clinical skills development, but at this point it is relevant to note that locums were less likely than employees of national companies to have had an appraisal in the last two years, with a number of them stating that locum status was the reason.

3.4.4 Total working hours: Respondents were asked to state how many hours they worked across their primary role and any other roles. The information was used to calculate how many worked full time and, for those in a part-time role, their their FTE. The ONS definition of full-time work is employees working more than 30 paid hours per week, or 25 paid hours for the teaching professions (ONS, 2014), but many employers classify full-time work as 35 hours or more. The approach taken in this study was to divide full-time working into ten percentile bands, with each band ranging 0 to 3.5 hours. For example, up to 3.5 hours was classified as 0.1 FTE, 3.6 to 7 hours was 0.2 FTE, and 31.5 to 35 hours was classified as 1.0 FTE.

Figure 10 shows that, based on this equation, 65% of optometrists and 70% of dispensing opticians worked full time. Approximately 15% of optometrists and 10% of dispensing opticians worked the equivalent of three days a week (0.6 FTE) or less. Very few people, just 4.9% of optometrists and 2.6% of dispensing opticians, worked the equivalent of two days or less each week.

Figure 10: Working hours expressed as full-time equivalent



3.4.5 Annual income: Questionnaire respondents were asked about their total annual income from work to the nearest £1,000. On average, optometrists had higher incomes than dispensing opticians. Reported income among optometrists ranged from £3,000 to £450,000 per year. The mean was £44,328, but the standard deviation was wide: £33,562. The median point of £39,500 and the mode of £40,000 indicate that a better 'average' measure would be approximately £40,000. Among dispensing opticians, the median point was £26,000 and the mode was £30,000 so an estimate of 'average' annual salary would be between £26,000 and £30,000. Reported income among dispensing opticians ranged from £860 to £1,200,000 per year.

Figure 11 summarises annual income grouped into £5,000 bands. The income band with the largest proportion of optometrists was £35,001 – £40,000 (14.6%). The income band with the largest proportion of dispensing opticians was £25,001 – £30,000 (21.6%). Cumulatively, 22.3% of optometrists and 9% of dispensing opticians had an annual income in excess of £50,000.

At the higher end of the scale, the position was reversed: 3.6% of dispensing opticians reported an annual income in excess of £100,000 compared with 2.9% of optometrists.

Further analysis compared income bands with the total number of hours worked per week. Optometrists working full time had a mean annual income of £50,766 (median point was £45,000) while dispensing opticians working full time had a higher mean income of £52,318, but a lower median income of £28,000.

Figure 11: Income bands (expressed as a percentage of respondents)

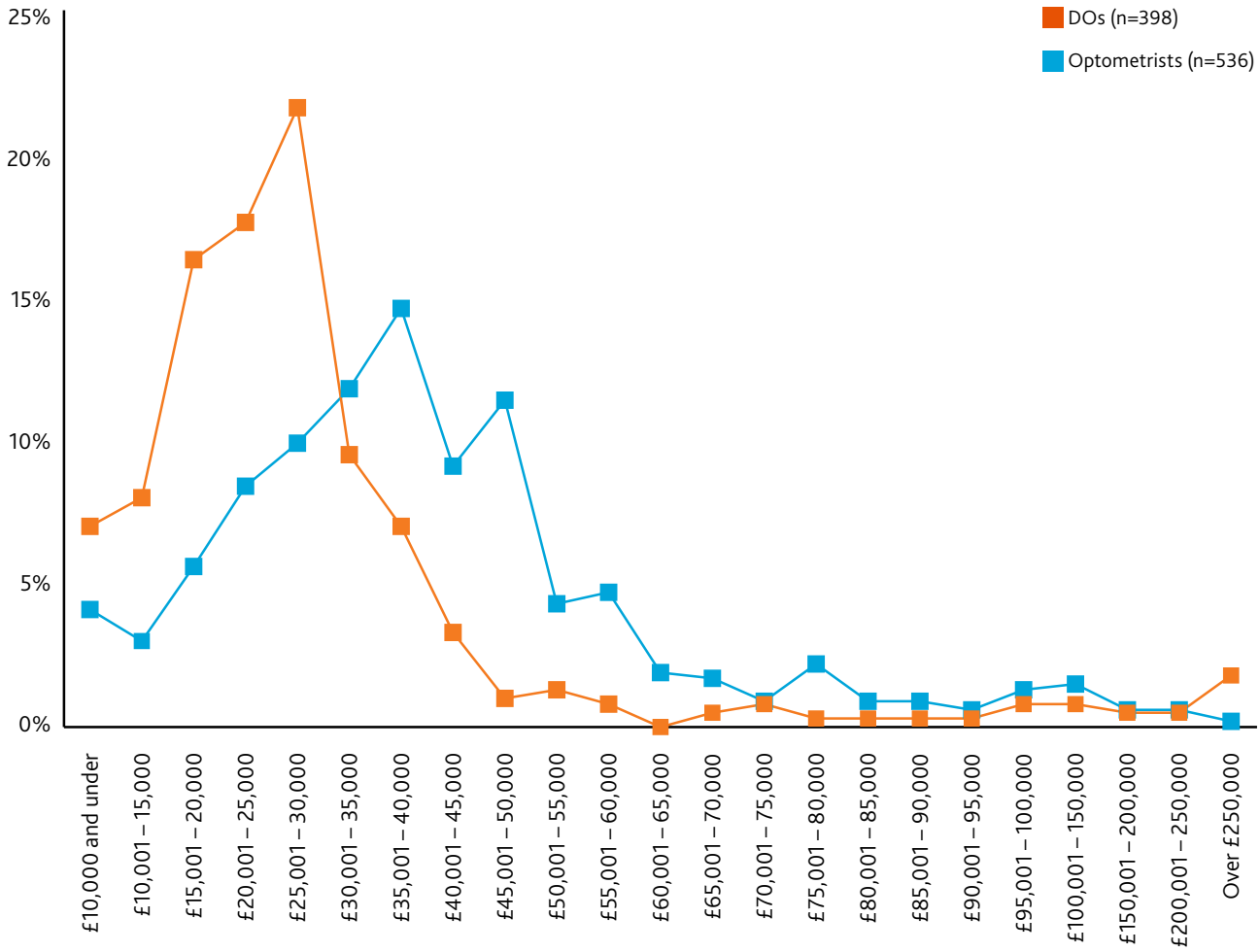


Figure 12: Optometrist average income by age and gender (controlled for part-time working)

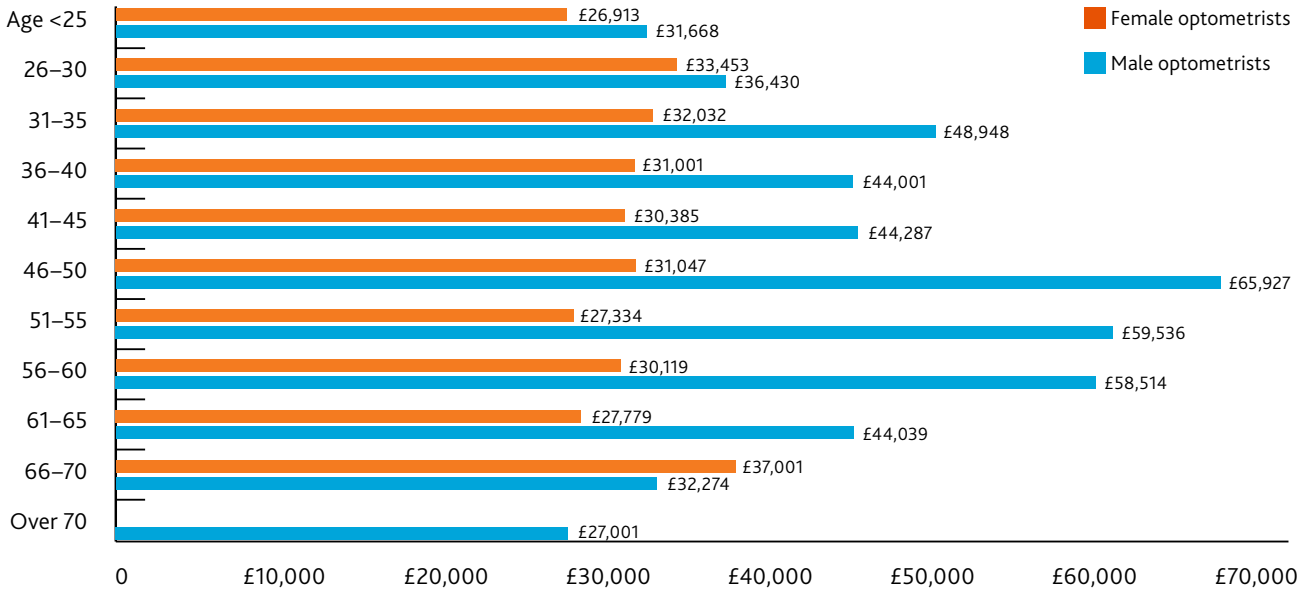
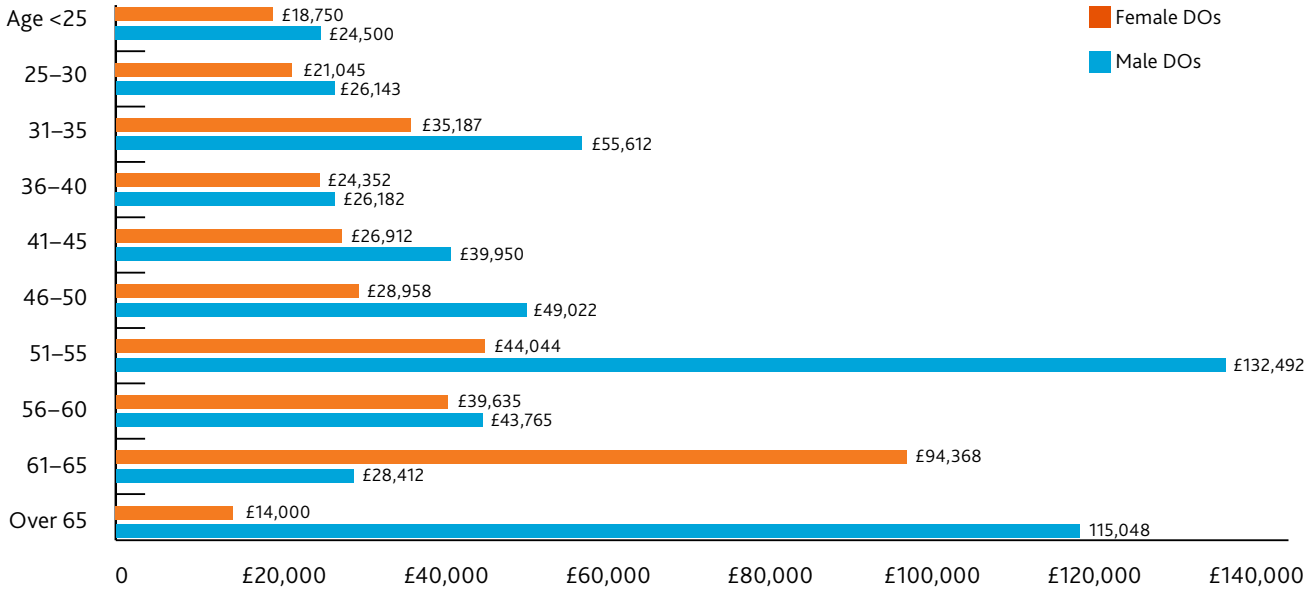
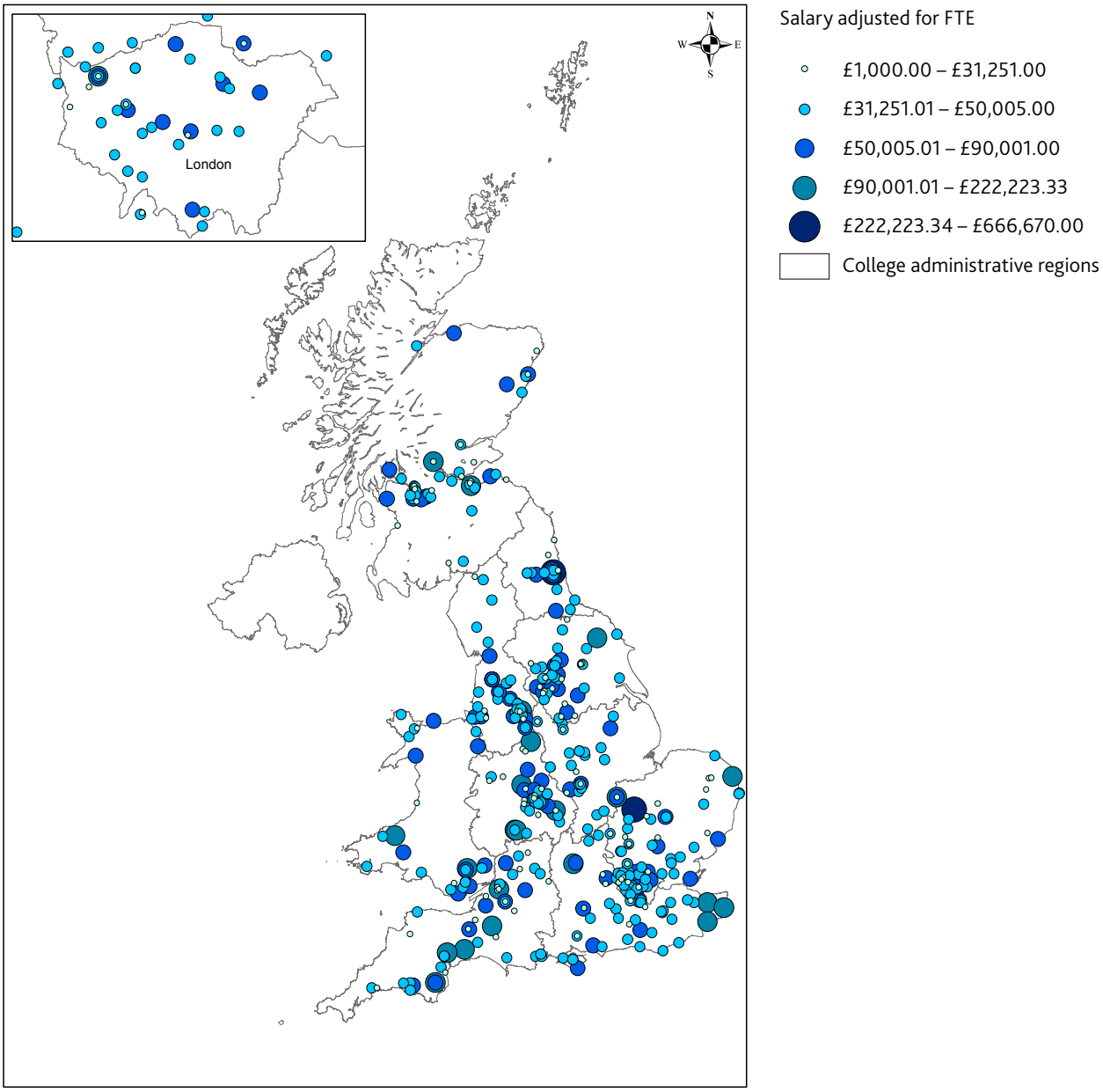


Figure 13: Dispensing optician average income by age and gender (controlled for part-time working)

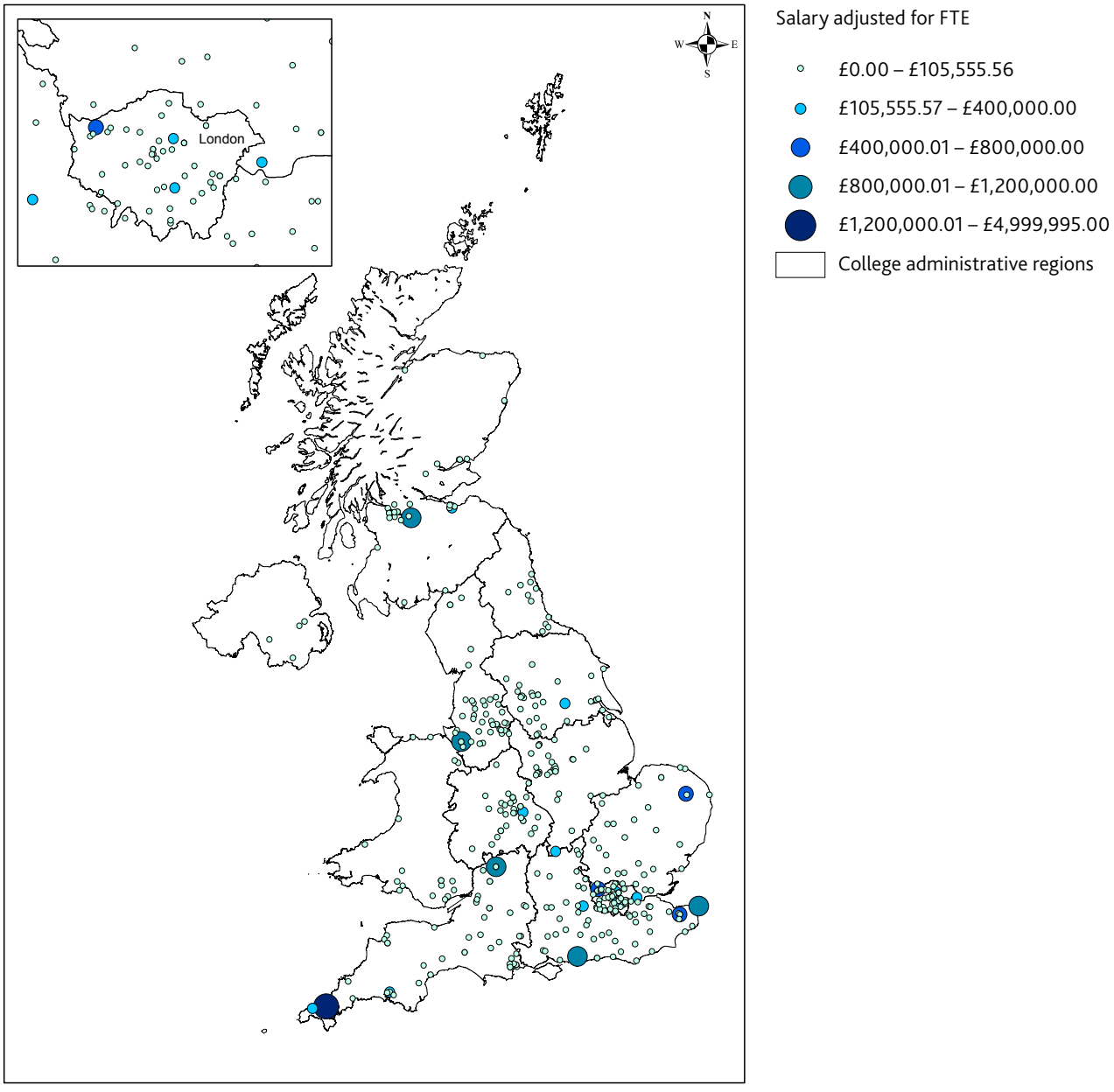


Although Figures 12 and 13 appear to show that women in both optometry and dispensing optics earn less on average in most age groups than men in their respective professions, even once full-time and part-time working has been controlled for, it is important to note that the possible effects of differences in work settings and specific roles has not been examined here. So while on average, across all roles and settings and in almost all age groups, women earn less than men, it is not possible to determine whether there are specific inequalities in terms of men and women being paid equally for the same work.

Map 2: Annual salary reported by respondent optometrists adjusted for FTE



Map 3: Annual salary reported by respondent dispensing opticians adjusted for FTE



Given the financial model for the optical sector, Maps 2 and 3 offer some interesting insights into the distribution of reported incomes for both professions. While it is not surprising to note that many of the points on the maps are clustered around cities or towns, it is interesting to see that some of the points representing the higher reported incomes in both professions are outside of main urban areas. This might support the qualitative data, which suggested that there were some areas in which employers found it more difficult to recruit, and consequently offered higher salaries as an inducement to potential candidates.

Optometrists who were interviewed thought that income had decreased in real terms in the past two decades. This was thought to be due to a number of factors, but particularly changes in the optical sector, with the growth of large national chains, increased competition, and the low public awareness and/or perception of the value of eye care reinforced by the NHS sight test fees paid to optometrists, as set out by the General Ophthalmic Services (GOS) contracts in place for individual devolved nations across the UK.

Their concern in relation to workforce capacity was an economic one of supply and demand: if there were too many optometrists, this would continue to drive down income.

3.5 Human capital

The value of a profession is drawn from the people who work in it and the term 'human capital' is used to describe people at work and their collective knowledge, skills, abilities and capacity. The extent to which people feel their human capital is put to use can also impact on job satisfaction and motivation.

The questionnaires produced considerable amounts of data on qualifications, training and experience. Some of the key findings are presented here – the full data can be found in Appendices 1 and 2.

3.5.1 Additional qualifications: Less than a quarter of optometrists had no additional qualifications, half had one additional qualification, and the remaining quarter had between two and seven additional qualifications. 11.6% reported that they were currently studying for an additional qualification. Dispensing opticians were asked about what qualifications they held in total, rather than additional qualifications. 45% had more than one qualification. The most widely held qualification was a Fellow Diploma of the Association of British Dispensing Opticians (78.9%) or a similar diploma. 13.7% held a first degree, 2.3% (n=13) held a master's degree and four (0.7%) had a PhD. An additional qualification in contact lens dispensing was held by 5% (n=25). 6.5% of dispensing opticians were currently studying for an additional qualification.

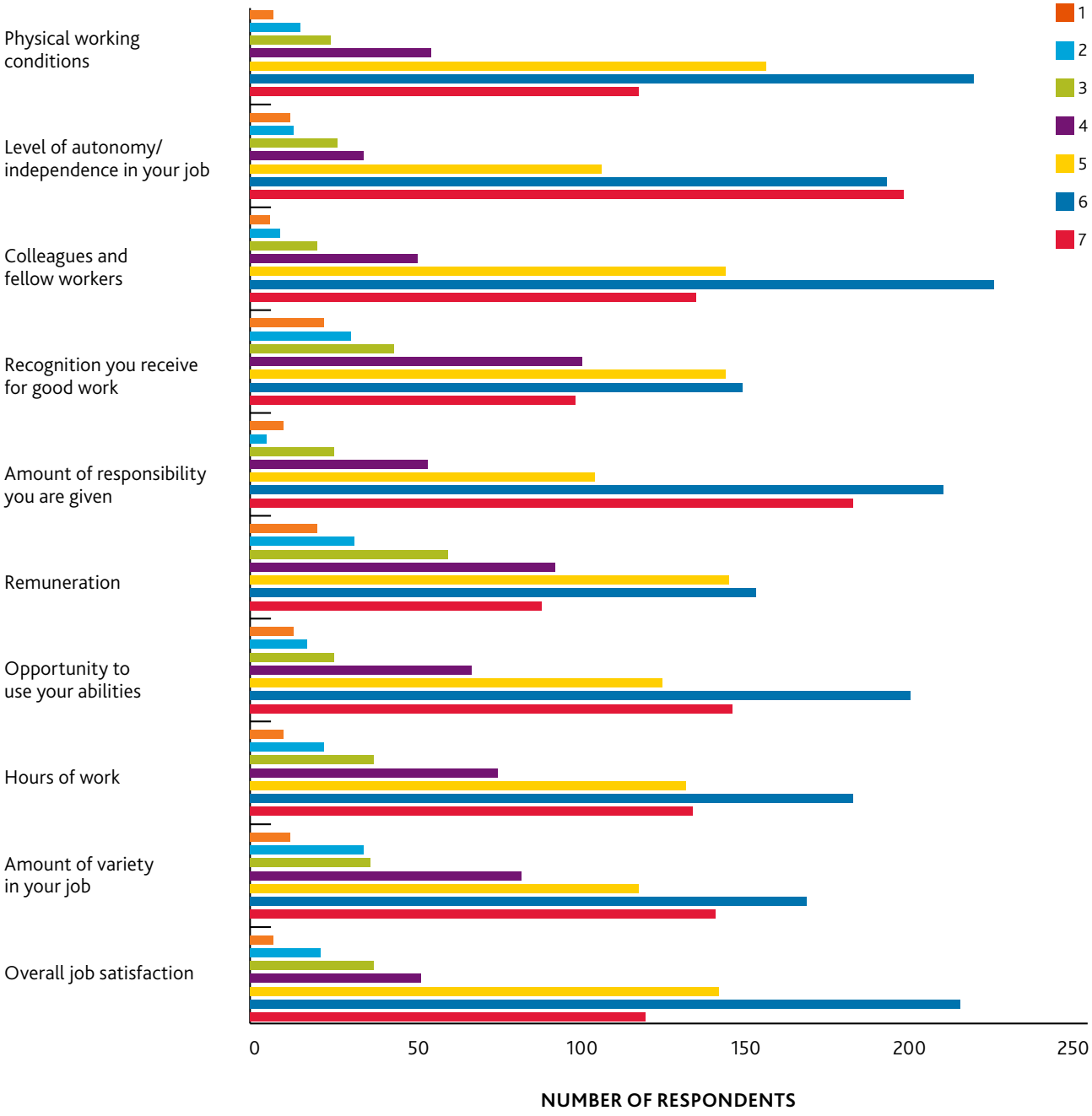
3.5.2 Clinical skills development: Most optometrists (93.3%) and dispensing opticians (89.7%) thought their clinical skills were being continuously developed. This was a self evaluation; the data on objective or external evaluation showed that over half of optometrists (n=345, 55.6%) and dispensing opticians (n=267, 52.7%) said they had received an appraisal of their clinical skills in the last 12 months. Those who had not been appraised said that it was because of one of the following reasons: it had never occurred to them/they did not know they should be appraised; they did not need one; as an employer, they appraised everyone else, but were not appraised themselves; they had not been offered an appraisal; there was no one available to do an appraisal; they were/sole workers/ locums/self employed.

3.5.3 Special clinical interest(s): Almost half of dispensing opticians (n=288, 49.5%) said they had an area of special clinical interest. The main area was contact lenses (43%) followed by children (27%). This was encouraging, given that the shortage of contact lens opticians was raised in the interviews. A slightly lower proportion of optometrists said they had a special interest (42.8%). Contact lenses and children were two of the most popular topics; glaucoma was the third, with all three topics cited by around 19%. Further data on special interest(s) is contained in Appendix 1.

3.5.4 Job satisfaction: The questionnaires presented respondents with a list of 10 job satisfaction factors and asked them to rate their personal satisfaction on each using a scale of 1-7 (1 = extremely dissatisfied, 7 = extremely satisfied). They were also asked to identify the factor that was most important to them as individuals.

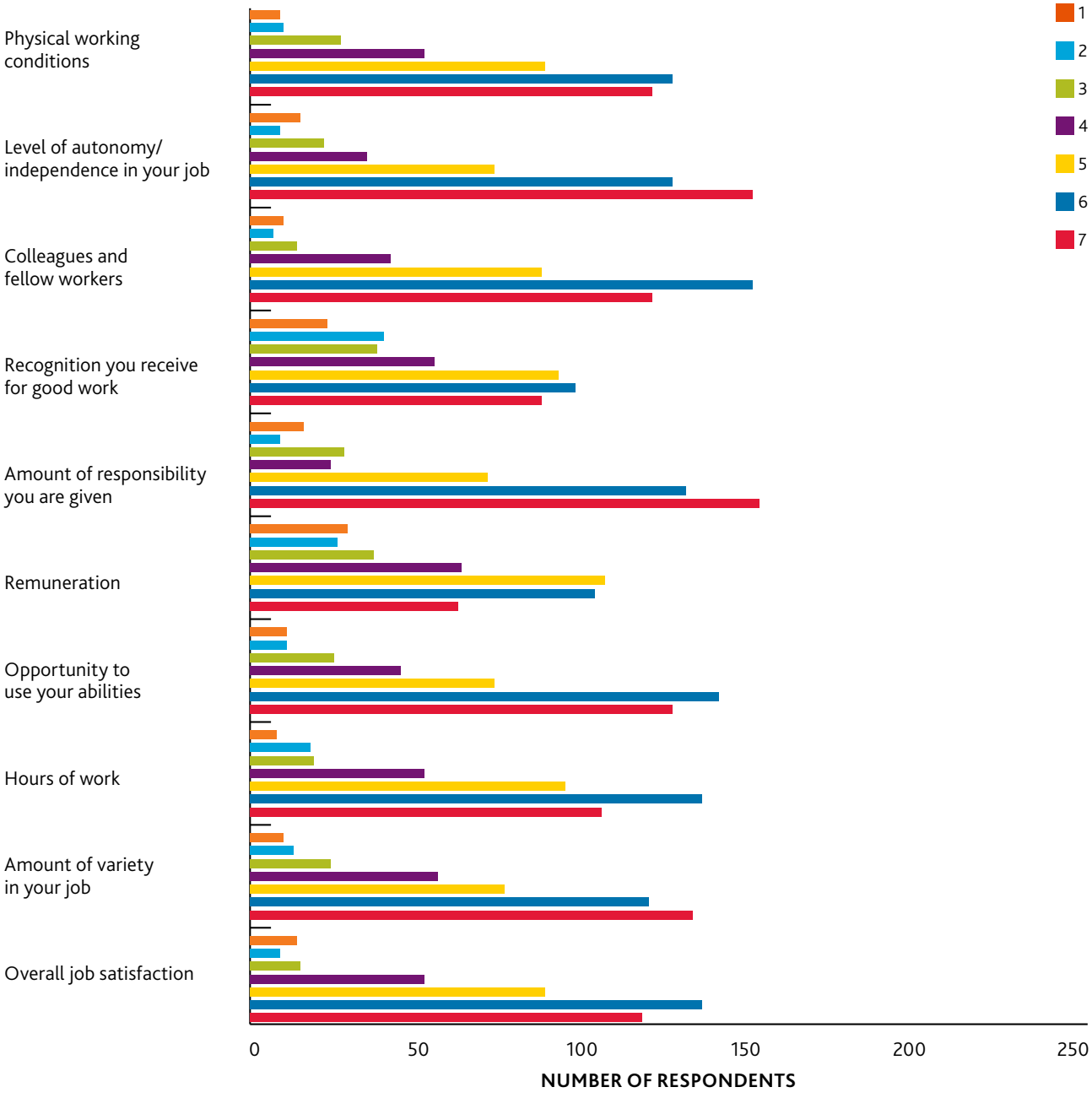
Figure 14 shows the spread of satisfaction scores from optometrists and demonstrates that all 10 factors were rated 5, 6 or 7 (at the satisfied end of the scale) by the majority of optometrists. The actual numbers of optometrists who scored each factor at the dissatisfied end of the scale (1, 2 or 3) were low. The area of dissatisfaction for the greatest number of optometrists was remuneration (n=110, 18.8%) followed by 'the recognition you receive for good work' (n=95, 16.4%).

Figure 14: Optometrist job satisfaction scores (1 = extremely dissatisfied, 7 = extremely satisfied)



In comparison, Figure 15 shows the satisfaction scores from dispensing opticians. The results are similar in that all 10 factors were rated 5, 6 or 7 (at the satisfied end of the scale) by the majority of dispensing opticians. However, the percentages of practitioners who expressed dissatisfaction by rating a factor as 1, 2 or 3 were higher in the case of remuneration (21.6%) and 'the recognition you receive for good work' (n=95, 23.4%).

Figure 15: Dispensing optician job satisfaction scores (1 = extremely dissatisfied, 7 = extremely satisfied)



Further examination of the data (Table 6) compared satisfaction across both groups. While the mean scores are very similar for each factor, the standard deviation is higher among dispensing opticians for all factors except 'the amount of variety in your job,' indicating a broader spread of opinion.

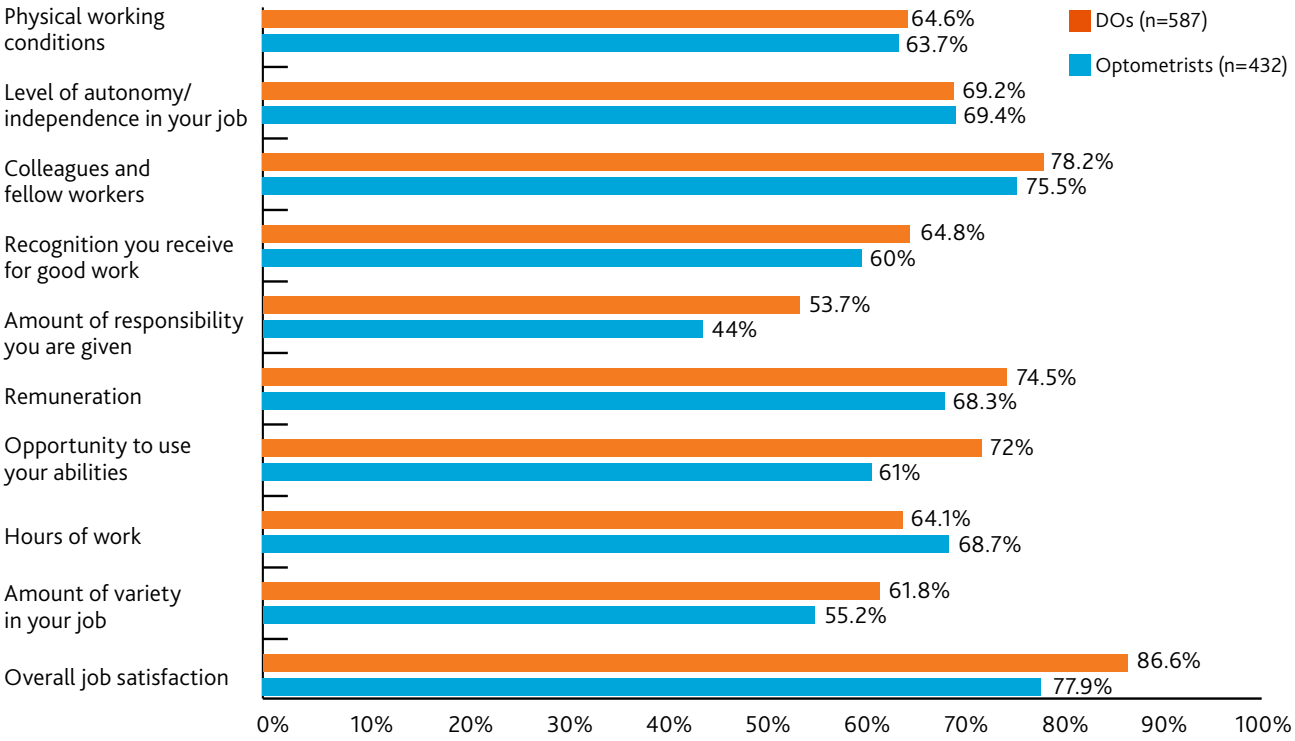
Table 6: Comparison of satisfaction with individual job factors

OPTOMETRISTS	NUMBER	MEAN	MEDIAN	MODE	SD
Physical working conditions	586	5.47	6.00	6	1.274
Level of autonomy/independence in your job	584	5.68	6.00	7	1.407
Colleagues and fellow workers	582	5.60	6.00	6	1.212
Recognition you receive for good work	580	4.96	5.00	6	1.570
Amount of responsibility you are given	583	5.70	6.00	6	1.310
Remuneration	582	4.90	5.00	6	1.563
Opportunity to use your abilities	585	5.45	6.00	6	1.421
Hours of work	585	5.32	6.00	6	1.449
Amount of variety in your job	584	5.24	6.00	6	1.556
Overall job satisfaction	586	5.40	6.00	6	1.366

DISPENSING OPTICIANS	NUMBER	MEAN	MEDIAN	MODE	SD
Physical working conditions	432	5.45	6.00	6	1.455
Level of autonomy/independence in your job	430	5.60	6.00	7	1.536
Colleagues and fellow workers	430	5.60	6.00	6	1.361
Recognition you receive for good work	432	4.83	5.00	6	1.782
Amount of responsibility you are given	430	5.61	6.00	7	1.565
Remuneration	426	4.76	5.00	5	1.704
Opportunity to use your abilities	431	5.51	6.00	6	1.488
Hours of work	431	5.39	6.00	6	1.452
Amount of variety in your job	430	5.47	6.00	7	1.514
Overall job satisfaction	430	5.47	6.00	6	1.467

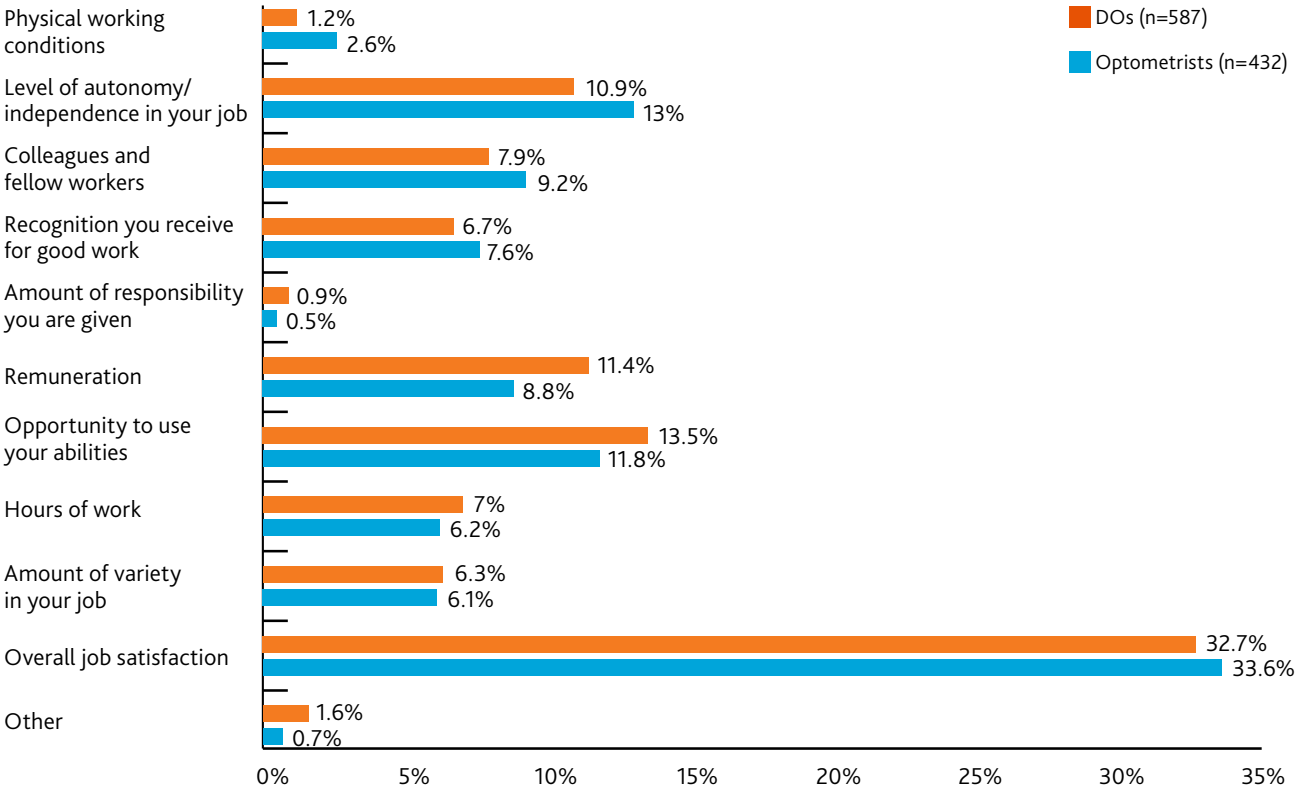
Figure 16 shows the percentages of respondents who thought that a job satisfaction factor was important. Figure 17 shows which one was the single most important factor. All factors were considered important by more than half of respondents with the exception of the amount of responsibility, which was identified by 44% of optometrists. Overall job satisfaction was considered important by 86.6% of dispensing opticians and 77.9% of optometrists followed by colleagues and fellow workers (78.2% and 75.5%).

Figure 16: Job satisfaction factors considered to be important (choose all that apply)



As Figure 17 shows, overall job satisfaction was also by far the most important single factor. For dispensing opticians the next most important are the opportunity to use abilities, followed by remuneration, and then level of autonomy. For optometrists, the second most important factor was level of autonomy, followed by opportunity to use abilities, and then colleagues and fellow workers.

Figure 17: Single most important job satisfaction factor (choose one only)

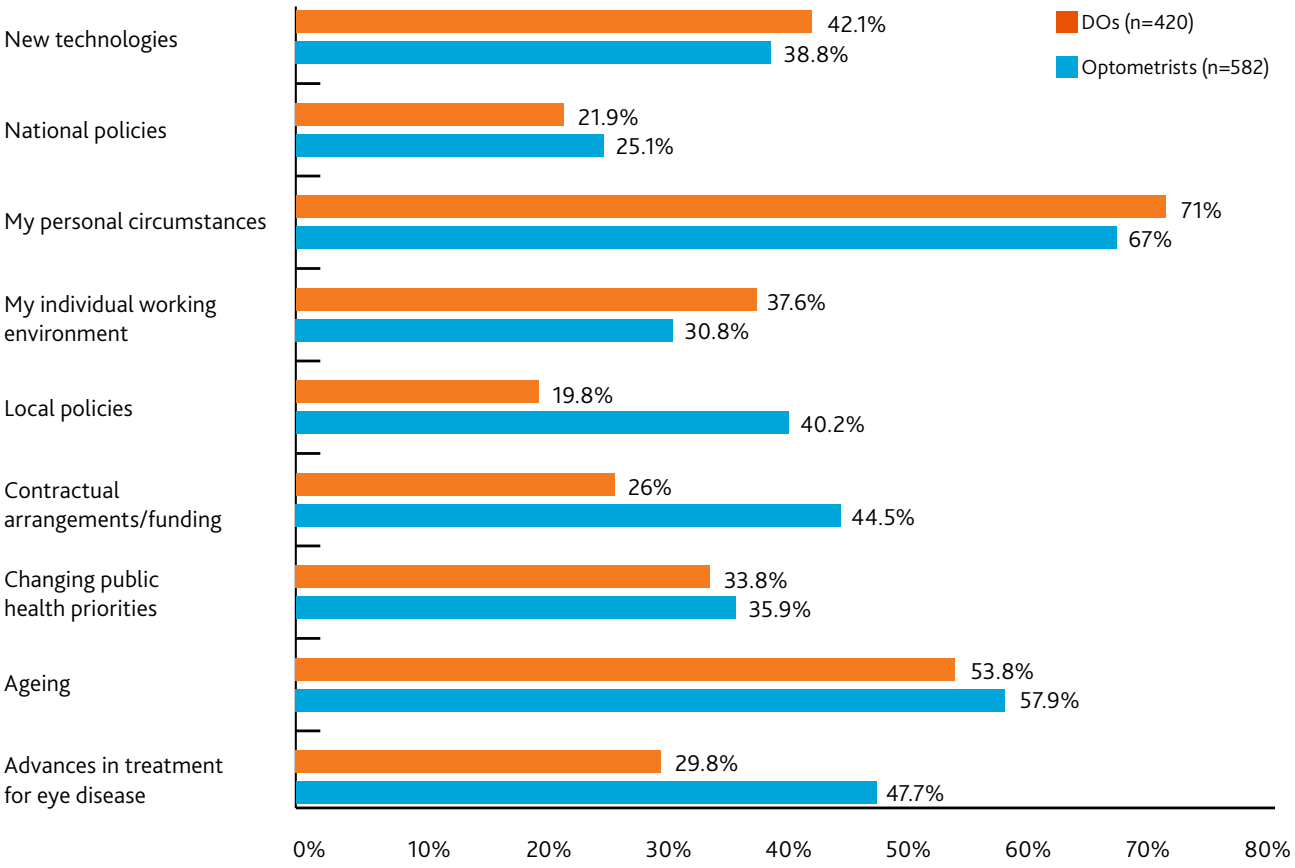


3.6 Changes in the next five years

When the Optometric Workforce Survey was conducted in 2010, the intention was to repeat the exercise every five years to monitor workforce changes and to provide objective evidence of change. Changes between 2010 and 2015 are discussed in Section 4.2.

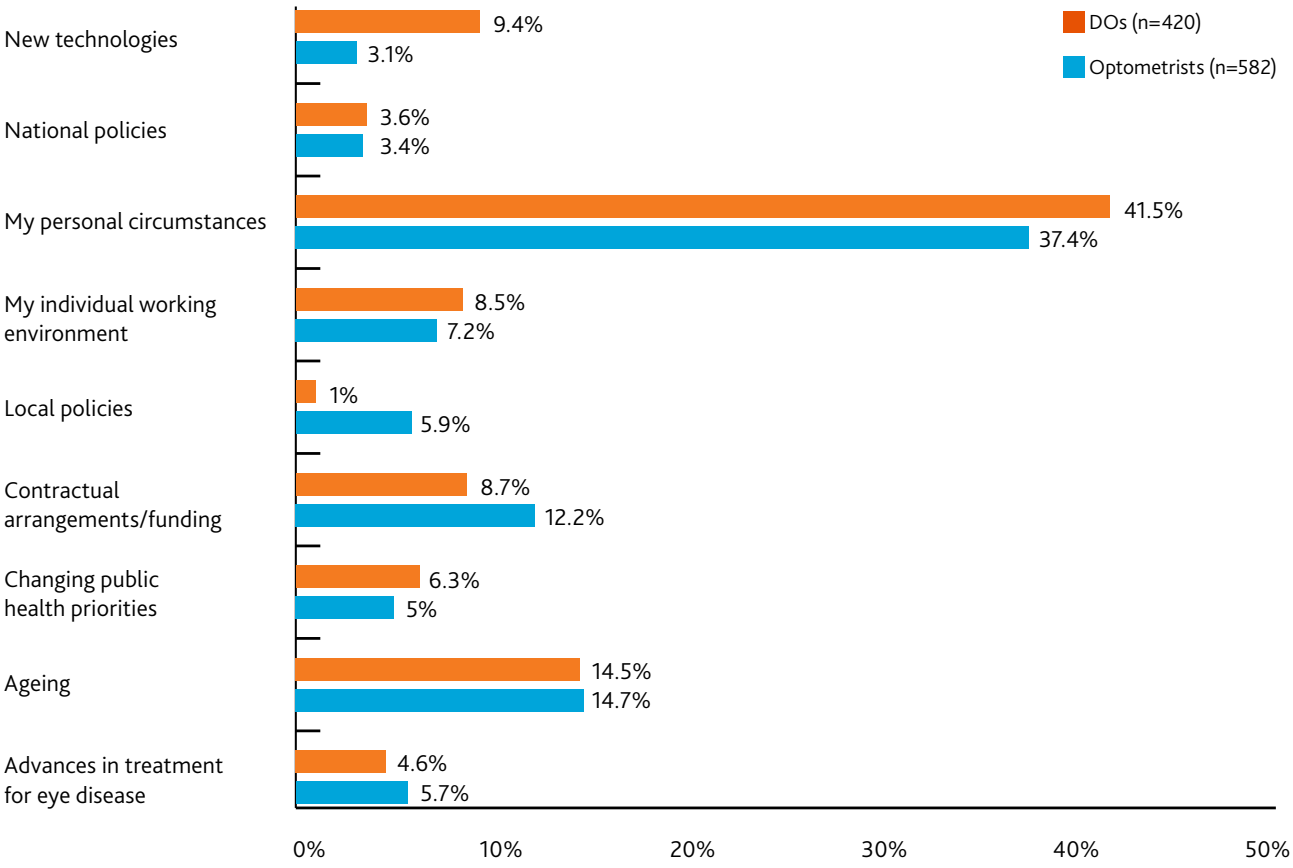
3.6.1 Factors influencing the work of optical professions in the next five years: Overall, when asked if a range of factors would have any influence on their work in the next five years (Figure 18), personal circumstances was the factor identified by the largest number of questionnaire respondents in both groups. The ageing population was identified as a factor by more than half of respondents. The most noticeable differences between professional groups were in attitudes towards local policies, which were considered important by 40.2% of optometrists compared with 19.8% of dispensing opticians, and contractual arrangements, which were considered important by 44.5% of optometrists and 26% of dispensing opticians.

Figure 18: Factors influencing work in the next five years (choose all that apply)



This was refined further by asking participants to identify the most important factor from the prescribed list (Figure 19). The previous trend continued to some extent: personal circumstances was again by far the most important factor, cited by 37.4% of optometrists and 41.5% of dispensing opticians, followed by the ageing population. The percentage of dispensing opticians who considered new technologies to be the most important factor was 9.4%, three times the percentage of optometrists.

Figure 19: The most important factor influencing work in the next five years (choose one only)



Additionally, subjective data on perceived changes over time were collected in the interviews and by asking participants for their opinions of how things might change in the next five years with regard to their personal circumstances, or due to clinical, local or national public policies, or population changes. Interviewees predicted increased prevalence of eye disease due to the ageing population with increased pressure on hospital eye services as a result. The creation of Clinical Commissioning Groups (CCGs) was raised with a hope that this would lead to more eye care being provided in primary care. Some interviewees also mentioned new technologies in that they expected that this would have an impact on the optical sector.

3.6.2 Career preferences in the next five years:

The questionnaires asked participants about their personal career preferences within the next five years. Overall data and responses by gender are shown in Table 7. Respondents could select multiple options, so responses are not mutually exclusive. There is a large amount of data contained in this table so the main findings are highlighted below.

- Flexible working is the main career preference for both professional groups: 45.7% of optometrists and 35.6% of dispensing opticians.
- More than a quarter of respondents would like professional development or training in an area of special interest.
- More than one fifth plan to retire in the next five years: 21.7% of optometrists and 22.8% of dispensing opticians.
- Nearly one quarter of optometrists (24.3%) and 13.5% of dispensing opticians would like to decrease their working hours.
- Only 4.7% of optometrists and 4.5% of dispensing opticians would like to increase their working hours, but this could be a reflection on the fact that most respondents already work full time. However, only 1.2% of optometrists and 3.3% of dispensing opticians would like to increase their working hours from part time to full time.

Table 7: Career preferences in the next five years

	OPTOMETRISTS (n=585)				DISPENSING OPTICIANS (n=421)			
	NUMBER	%	FEMALE	MALE	NUMBER	%	FEMALE	MALE
Flexible working	267	45.7%	51.4%	38.6%	150	35.6%	42.2%	28.5%
Career break	35	6.0%	8.7%	2.5%	8	1.9%	3.8%	0%
Leadership role	85	14.6%	13.2%	17.0%	65	15.4%	15.2%	16.7%
Move to a role at a practice (independent)	27	4.6%	6.3%	2.1%	21	5.0%	6.6%	3.2%
Move to a role at a practice (franchise)	9	1.5%	1.5%	1.7%	6	1.4%	2.4%	0.5%
Move to an academic role (research or teaching)	31	5.3%	5.7%	5.0%	21	5.0%	6.2%	3.2%
Move to a hospital role	36	6.2%	7.5%	4.6%	18	4.3%	5.7%	2.2%
Move to a locum role	31	5.3%	6.0%	4.6%	15	3.6%	2.8%	4.3%
Move to a domiciliary role	6	1.0%	1.2%	0.8%	6	1.4%	1.9%	1.1%
Professional development or training in area of special interest	167	28.6%	32.1%	23.7%	122	29.0%	35.5%	21.5%
Formal qualification or higher degree in area of special interest	91	15.6%	18.0%	12.0%	55	13.1%	14.2%	10.8%
Establish a practice (independent)	34	5.8%	5.4%	6.6%	28	6.7%	4.3%	8.6%
Establish a practice (franchise)	17	2.9%	2.1%	4.1%	12	2.9%	2.4%	2.7%
Engagement in research	37	6.3%	7.8%	4.1%	11	2.6%	0.9%	4.3%
Overseas work	38	6.5%	8.1%	4.1%	12	2.9%	3.3%	2.7%
Charity, community work	57	9.8%	10.8%	8.3%	26	6.2%	8.1%	4.3%
Increase work hours	28	4.8%	6.9%	2.1%	19	4.5%	6.6%	2.2%
Increase work hours from part time to full time	7	1.2%	1.5%	0.4%	14	3.3%	5.2%	1.6%
Decrease work hours	142	24.3%	22.8%	27.4%	57	13.5%	11.8%	16.7%
Decrease work hours from full time to part time	65	11.1%	10.8%	11.6%	48	11.4%	10.9%	12.9%
Leave current practice and relocate to another area	23	3.9%	3.9%	3.3%	20	4.8%	6.6%	3.2%
Leave current practice and stay in the same area	26	4.5%	6.6%	1.7%	28	6.7%	6.6%	6.5%
Leave the profession	45	7.7%	5.4%	11.2%	42	10.0%	6.2%	14.5%
Leave direct patient care	3	0.5%	0.3%	0.8%	6	1.4%	0.5%	2.7%
Leave healthcare work entirely	6	1.0%	0.3%	2.1%	7	1.7%	0%	3.8%
Retirement plans	127	21.7%	17.1%	28.2%	96	22.8%	14.2%	33.3%

Because responses to each answer option were not mutually exclusive it is not possible to calculate the percentage of respondents who would prefer to reduce their working hours or leave the profession completely, whether this is through retirement or a change in career.

However, the data suggests that if respondents pursued their stated career preferences there would probably be a net loss of capacity in both professions. For the optometrist respondents, for example, even if those respondents individually selecting 'retirement plans' (21.7%); 'decrease work hours' (24.3%); and 'leave the profession' (7.7%) are predominantly the same respondents choosing all three, this is still a greater number than those who will enter the workforce as newly qualified registrants (around 4–5% of the total profession each year).

These career choices were in relation to the next five years, and so it is impossible to give an estimate for yearly turnover, but it seems likely that new people would start to plan for these options each year, due to the natural turnover of the profession. The full-time/part-time ratio of those entering the profession may also be different to those finishing their careers. These data combined, therefore, suggest that, if anything, there may be a reduction in capacity rather than an increase in capacity.

3.6.3 Adequacy of the optical workforce to meet demand:

In light of these findings on workforce capacity, participants were asked for their opinion on the current workforce in their local area, in terms of its adequacy for current demands and likely capacity to meet future requirements. Although this was explored as a multiple choice question, there was a difference between the two survey questionnaires in that dispensing opticians were able to select one response from the list of options on the online questionnaire, while optometrists were able to select more than one response. This may account for some of the differences seen in Table 8.

The largest single response from both professions was that the current workforce was adequate for current and future demands: this was the view of around one third of respondents. A current shortage of dispensing opticians in their local area was perceived by 18.2%, although only 7.9% forecast a shortage of dispensing opticians in five years time. Proportionally fewer optometrists perceived current and future shortages of 14.9% and 2.9% respectively. A small proportion of dispensing opticians (4.8%) thought there was currently an oversupply and slightly more (5.8%) thought there would be an oversupply in the next five years. In comparison, a sizeable proportion of optometrists (22.7%) were of the opinion that there was an oversupply currently and a similar percentage (21.9%) thought there would be an oversupply in the next five years.

Table 8: Opinion on the current workforce in their local area in terms of its adequacy for current demands and likely capacity to meet future requirements

	OPTOMETRISTS		DISPENSING OPTICIANS	
	NUMBER (n=585)	%	NUMBER (n=417)	%
Adequate for current and future demands	187	31.9%	142	34.1%
Current shortage of workforce	87	14.9%	76	18.2%
Current oversupply of workforce	133	22.7%	20	4.8%
Shortage of workforce in the next 5 years	17	2.9%	33	7.9%
Oversupply of workforce in the next 5 years	128	21.9%	24	5.8%
Don't know	88	15.0%	111	26.6%

Geographic variations were explored by devolved nations; this was only done for optometrists due to the small number of dispensing opticians who responded from Northern Ireland, Scotland and Wales.

Figure 20 shows the differences between devolved nations. To facilitate comparison between nations the bars represent the percentage of respondents from each nation, not the numbers.

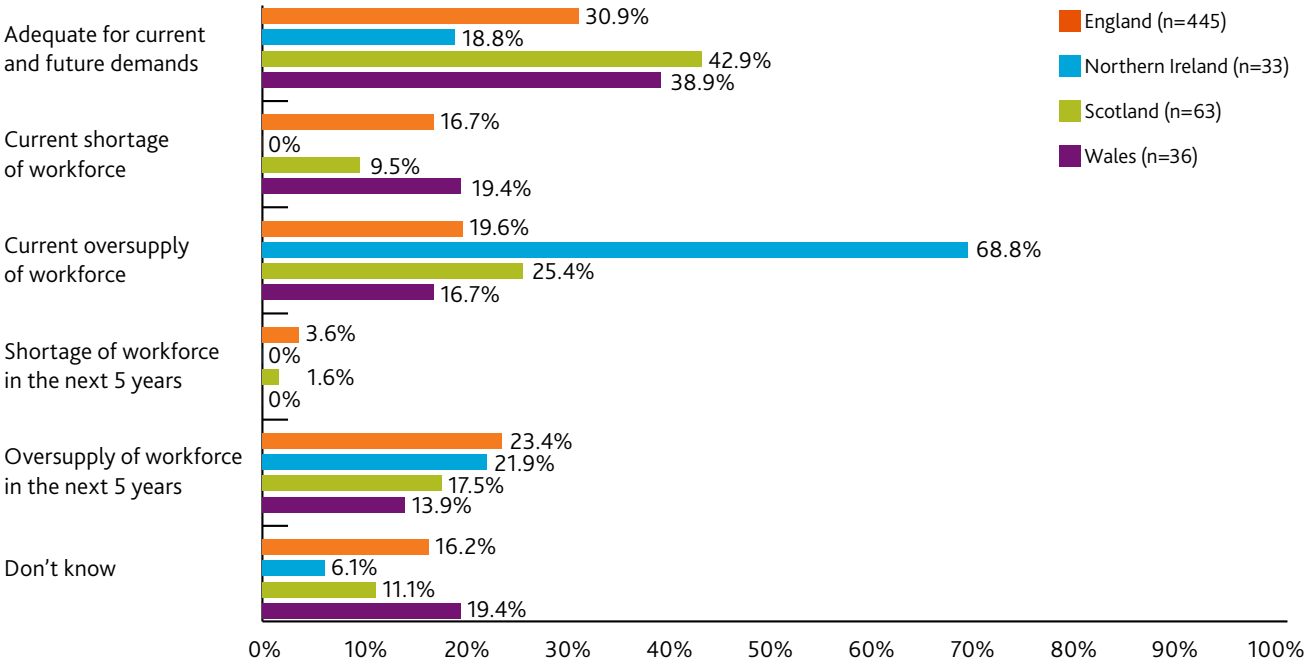
More than two thirds of Northern Ireland respondents thought there was currently an oversupply; however, less than a quarter thought there would be an oversupply in the next five years. No respondents from the country thought there was an undersupply, either currently or that there would be one in the future.

In England, 19.6% of respondents thought there was currently an oversupply while 23.4% thought there would be an oversupply in five years time. England was the only country from which a higher percentage of respondents thought there will be an oversupply in five years (as compared to the percentage who believe there is currently an oversupply).

In Wales 19.4% of optometrists thought there was a current shortage, but none thought this would be the case in five years.

In Scotland and England, the number of optometrists who thought there was a workforce shortage in their local area currently was approximately six times higher than the number who predicted a shortage in five years.

Figure 20: Optometrist opinions on the current workforce in their local area



Current and future capacities were key areas of discussion in the stakeholder interviews. There was a wide disparity of views on optometrist capacity. Some individuals were sure that there was already an oversupply and that the situation would worsen in future years due to increased numbers of students enrolling in and graduating from optometry courses and then entering the GOC register. The addition of Plymouth University in 2011, and the future addition of a tenth school at the University of Hertfordshire and potentially an eleventh school at the University of Portsmouth, were cited as evidence of increasing numbers, but it was also acknowledged that more established optometry programmes had also increased their intake sizes in recent years.

A second view was that the demographics of the optometric workforce had changed from predominantly male to female, and that the impact of this was unknown. More specifically, although there may be more optometrists, workforce capacity in hours and full-time equivalents may have remained the same or reduced due to more part-time working.

The third view, mainly put forward by employers, was that there were shortages in some geographical areas and possible oversupply in others. The issue for them was not only whether there should be any changes in the numbers of optometrists entering the profession, but how they could be encouraged to take up posts in areas of undersupply.

Incentives such as higher salaries and relocation packages were available, but this was not enough to persuade young optometrists to move away from the areas where they had grown up or gone to university, a view supported by the students who were interviewed. Nor were they sufficient to persuade older optometrists to uproot their families and relocate.

4 Discussion

4.1 Strengths and limitations of the study

Before reviewing the study findings emanating from the data it is important to consider the strengths and limitations of the study.

4.1.1 The optometrist survey: The questionnaire was sent to a randomly selected sample of 2,000 College members registered to practise with the GOC. In 2013 there were 13,589 optometrists and 6,244 dispensing opticians registered to practise with the GOC, so the sample is likely to be broadly representative of the profession.

The survey elicited 598 completed questionnaires and a further 43 questionnaires that were completed as far as Question 25, the first forced response question. With a sample of 2,000, these figures represent response rates of 29.9% and 32.05% respectively. This level of response is low for surveys in general, but not for professional workforce studies. The US Eye Care Workforce Study was commissioned by the American Optometric Association (AOA) and had a response rate of 18.1%. The consulting firm that conducted the survey (AOA, 2014) reported that response rates of previous studies 'average at and under roughly 20%'.

4.1.2 The dispensing optician survey: The invitation to participate was extended to all fully qualified ABDO members, estimated to be 5,700 dispensing opticians. Initially 577 dispensing opticians partially answered the questionnaire (10.1% response rate); 124 dropped out at the first forced choice question (question 25), reducing the response rate for the full questionnaire to 453 (7.9%).

The potential for responder bias is high with such a low level of response and it would be incautious to generalise the results beyond the sample to the general population of dispensing opticians. However, the results provide a baseline for comparison with future surveys where revised methods might elicit a higher response. The results also provide a starting point for further discussion about the dispensing optician workforce.

4.1.3 The optical sector stakeholder interviews: Qualitative data derived from interviews with a range of stakeholders is a component that is not usually found in workforce studies. Whereas quantitative data is useful for measuring how many people in a population have a particular view or the strength of opinion, qualitative data seeks to explore, describe and explain phenomena.

This element of the study provided contextual information and insights into findings that emerged from the surveys. Questionnaires are a useful tool for collecting short responses to preset questions from large numbers of people, enabling their views to be collected quickly. Qualitative methods such as interviews provide a different kind of information. Open questions are used to allow participants to say as much as they want to in response and the question schedule is semi-structured to allow participants to introduce additional elements that they consider relevant or important.

The purposely selected sample of 41 stakeholders is a sizeable sample for any qualitative study, but it should be noted that the inclusion of several different stakeholders, while providing a wide range of perspectives, meant that the number in any sub-group was relatively small.

4.2 Comparison with the Optometric Workforce Survey 2010

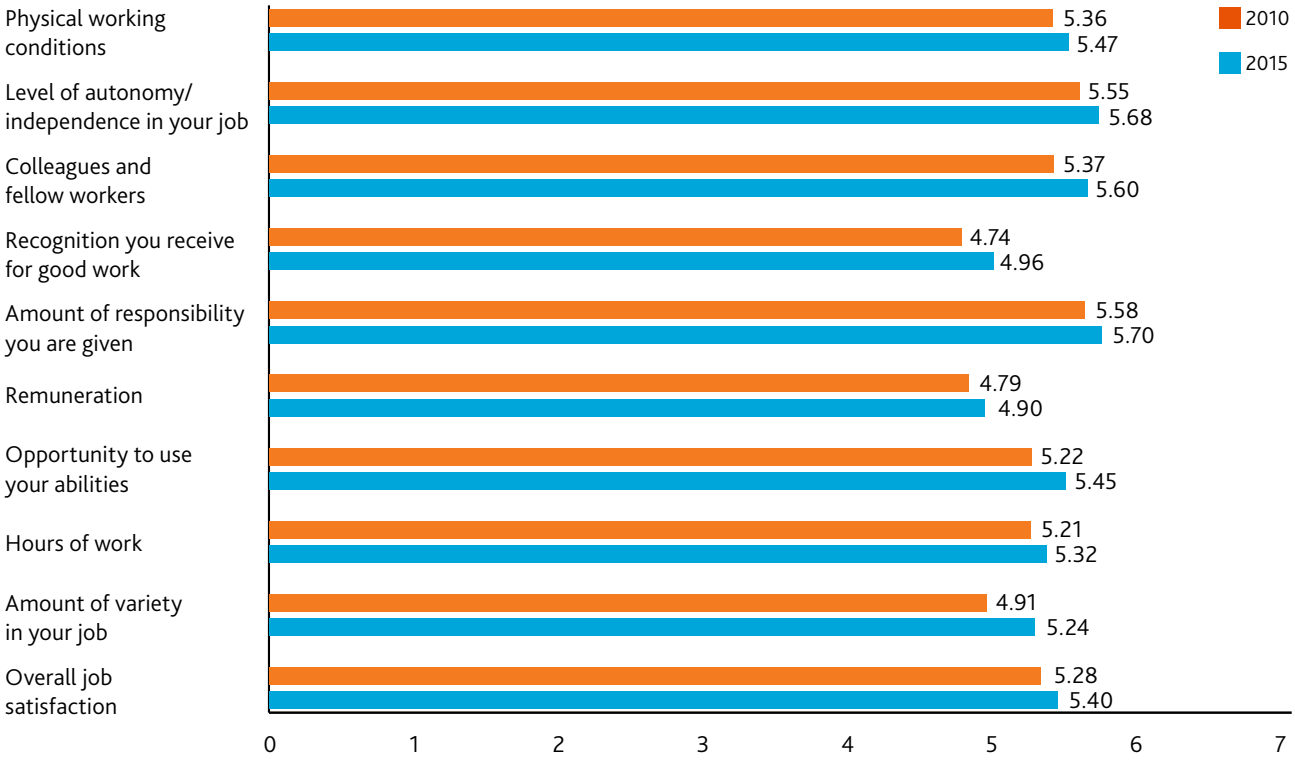
There are major differences between the 2010 Optometric Workforce Survey and the 2015 Optical Workforce Survey. The former was limited to a survey of optometrists, while the latter had the additional components of a dispensing optician questionnaire and qualitative data from stakeholder interviews. Therefore it is only possible to compare the optometrist survey data.

The 2010 survey collected data from a much larger sample: there were 3,122 responses compared with 641 in 2015. The OWS 2010 used a census approach, and the questionnaire was sent to 9,000 College members. The OWS 2015 used a sampling approach to distribute the survey to 2,000 randomly selected College members. The response rate for both the OWS 2010 and OWS 2015 was approximately 30%. Both surveys covered the same broad areas, but the questionnaires were not identical: some questions from 2010 were omitted and new ones added, some questions were phrased differently and some questions sought responses in a different format; therefore, not all data are directly comparable. The following tables (9 and 10) and Figure 21 compare the results from the two surveys where possible.

Table 9: Comparison of OWS 2010 and OWS 2015 optometrist responses (demographic data)

	2010 (OPTOMETRISTS)	2015 (OPTOMETRISTS)
GENDER		
Female	60.6%	57.9%
Male	39.4%	42.1%
AGE		
Under 30 years (2010)/30 years and under (2015)	20.4%	17.2%
30–39 years (2010)/31–40 years (2015)	26.3%	19.6%
40–49 years (2010)/41–50 years (2015)	29.2%	23.2%
50–59 years (2010)/51–60 years (2015)	19.3%	28.0%
60 years and over (2010)/61–70 years (2015)	4.8%	12.0%
ETHNICITY		
English/Scottish/Welsh/Northern Irish/Irish/Other White	77.1%	82.7%
Asian or Asian British	19.5%	15.7%
Black or Black British	0.6%	0.4%
Mixed/Other	2.8%	1.2%
EMPLOYMENT STATUS		
Full-time employed	48.6%	39.4%
Full-time self-employed	12.8%	18.8%
Part-time employed	25.7%	19.7%
Part-time self-employed	11.6%	17.1%
Other	1.3%	5.0%
Locums	10.5%	17.5%
ANNUAL INCOME		
Less than £30,000 (2010)/£30,000 and under (2015)	23.8%	31.0%
£30,000–£39,999 (2010)/£30,001–£40,000 (2015)	24%	26.4%
£40,000–£49,999 (2010)/£40,001–£50,000 (2015)	24.3%	20.5%
£50,000 and over (2010)/Over £50,000 (2015)	27.8%	22.3%

Figure 21: Comparison of OWS 2010 and OWS 2015 optometrist job satisfaction (mean score)



The list of multiple choice answer options provided for the question related to career path preferences in the OWS 2010 was expanded in the OWS 2015. For example, the answer option 'increase work hours', offered in 2010, was expanded into two slightly different options in 2015. 'NA' stands for 'not assessed'. It should be noted that respondents were instructed to select all answers that apply, and may have selected more than one. The table below compares responses to this question from optometrists in 2010 to responses in 2015.

Table 10: Comparison of OWS 2010 and OWS 2015 optometrist responses: career path preferences over the next five years

	2010	2015
Flexible working	30.3%	45.7%
Career break	N/A	6.0%
Leadership role	22.4%	14.6%
Move to a role at a practice (independent)	N/A	4.6%
Move to a role at a practice (franchise)	N/A	1.5%
Move to an academic role (research or teaching)	N/A	5.3%
Move to a hospital role	N/A	6.2%
Move to a locum role	N/A	5.3%
Move to a domiciliary role	N/A	1.0%
Professional development or training in an area of special interest	31.0%	8.6%
Formal qualification or higher degree in area of special interest	N/A	15.6%
Establish a practice (independent)	14.7%	5.8%
Establish a practice (franchise)	N/A	2.9%
Engagement in research	8.2%	6.3%
Overseas work	7.5%	6.5%
Charity, community work	16.8%	9.8%
Increase work hours	8.0%	4.8%
Increase work hours from part time to full time	N/A	1.2%
Decrease work hours	30.3%	24.3%
Decrease work hours from full time to part time	N/A	11.1%
Leave current practice and relocate to another area	5.2%	3.9%
Leave current practice and stay in the same area	5.0%	4.5%
Leave the profession	4.6%	7.7%
Leave direct patient care	1.3%	0.5%
Leave healthcare work entirely	0.5%	1.0%
Retirement plans	7.2%	21.7%

4.3 The current state of the optical workforce

The objectives of the OWS 2015 were:

1. to describe the characteristics of the optometric and dispensing optician workforces
2. to measure changes in the optometric workforce since the 2010 OWS
3. to assess the potential and limitations of existing data to quantify the current optometric and dispensing optician workforces
4. to explore factors that could impact on future workforce capacity.

The study did not aim to provide answers to any questions about a possible undersupply or oversupply of the optical workforce in the UK. However, the results, supplemented by additional data from other sources, can be used to identify and begin to explore some questions that arise in relation to a discussion of current and future workforce patterns.

4.3.1 Do we know the actual size of the optical workforce?

There is no single data set providing a definitive number of practising optometrists and dispensing opticians, so the simple answer to this question is 'No'. According to the GOC registers, which record information on the gender and age of all fully-qualified optometrists and dispensing opticians and all student registrants, in 2013 there were 13,589 optometrists and 6,244 dispensing opticians.

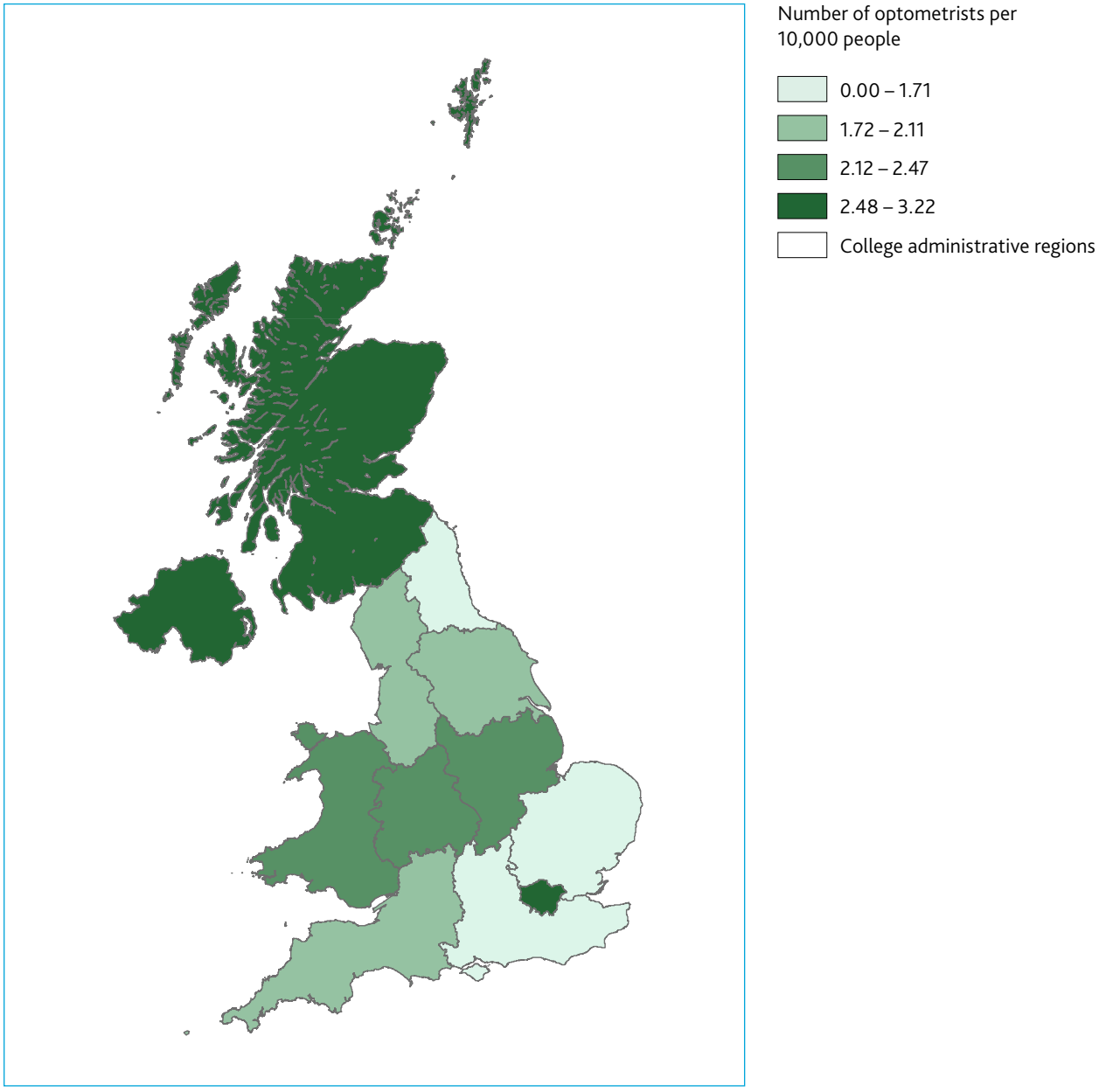
A review of assorted reports (HSCIC, 2014; NES, 2013; HSC, 2013) provides a breakdown of the number of optometrists registered to practise in each of the four countries of the UK; no breakdown of dispensing opticians is publicly available. Only Northern Ireland reported the number of dispensing opticians. However, the reporting dates for each country vary, which may account for the differences with the GOC registers.

The total number of registered optometrists in each country was:

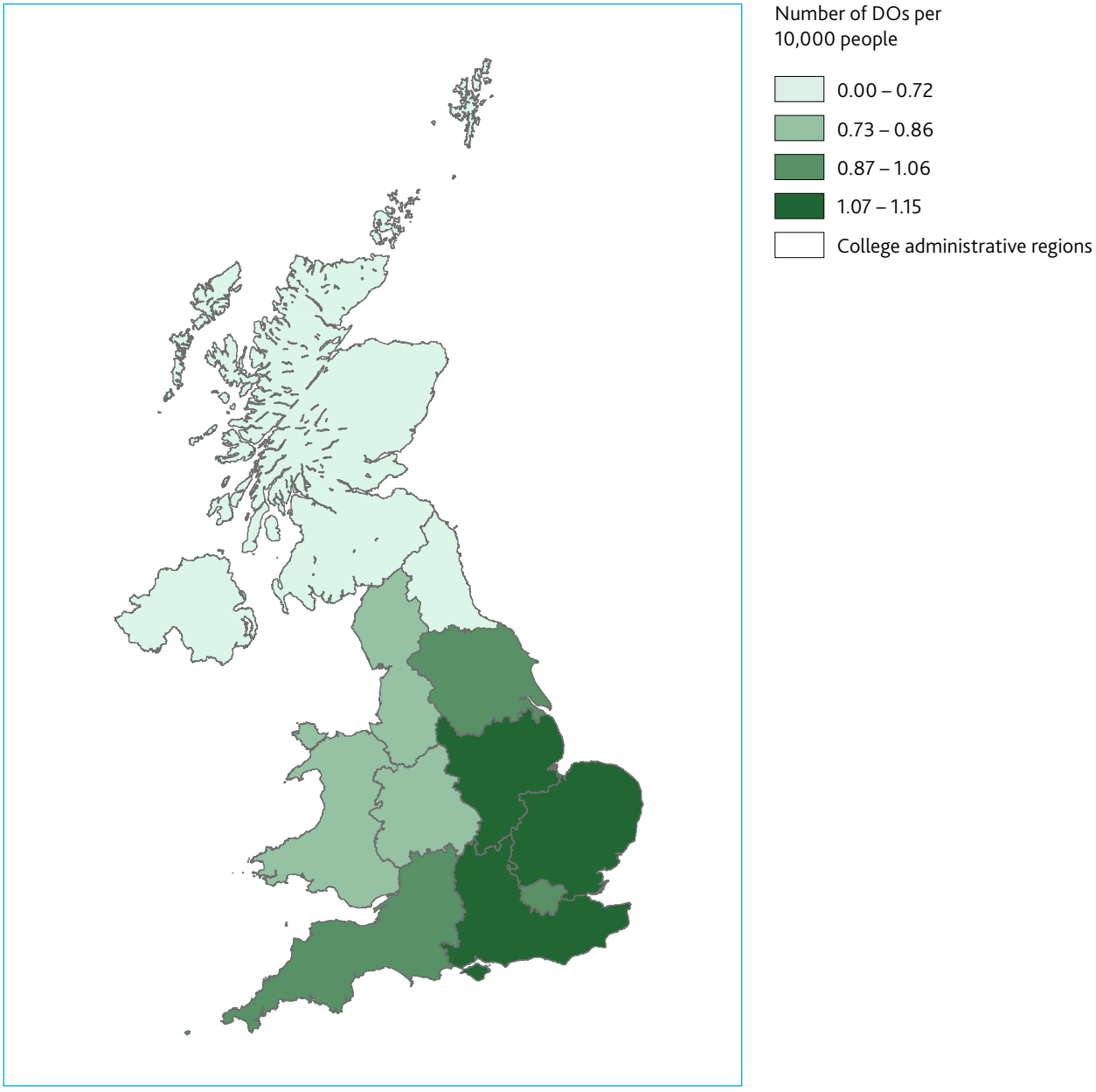
• England (31 December 2013)	11,164
• Northern Ireland (1 April 2013)	571
• Scotland (January 2012)	1,208
• Wales (31 December 2013)	773
Total	13,716

These figures are the numbers of practitioners registered; there is no additional data on how many are actually working at the time, so they include unemployed practitioners, those who are on a career break, or on parental leave. Nor is there any record of employment status in terms of whether they work full time or part time.

MAP 4: Workforce distribution of optometrists per 10,000 people in the UK (College of Optometrists, 2015)



MAP 5: Workforce distribution of dispensing opticians per 10,000 population in the UK (ABDO, 2015)



Maps 4 and 5 demonstrate the high level variations in regional distribution of optometrists and dispensing opticians. It is interesting to note that two of the regions with the highest concentrations of optometrists are devolved nations (Scotland and Northern Ireland), and that Wales is in the second highest category. Scotland and Northern Ireland also have the lowest numbers of dispensing opticians per 10,000 population. While this study has not identified data that would explain the reasons for these differences, it seems reasonable to suggest that they are worth further exploration. Map 4 was produced using data relating to GOC registered optometrists available through the College's database as of October 2015; the data for Map 5 came from ABDO and represents data for 90% of UK registered dispensing opticians.

Extrapolating OWS 2015 FTE data onto the registration figures provides an estimated number of FTE optometrists in each country. For example, 445 optometrists in England answered questions on their working hours. These hours were calculated as percentages of a FTE and equated with 392.9 FTE (88.29% of 445). So, every 1 registered person equates to 0.8829 FTE. When this percentage is applied to the number of registered optometrists in England (11,164) the FTE is 9,856 (11,164 x 88.29%).

Applying this formula to the four countries in the UK, the estimated number of FTE optometrists is as follows:

• England	9,856
• Northern Ireland	508
• Scotland	1,068
• Wales	667
Total FTE	12,099

4.3.2 Has the optical workforce increased?

Using GOS data, the Health and Social Care Information Centre (HSCIC, 2014) reported that the number of optometrists authorised to carry out NHS funded sight tests in England increased from 7,734 in 2003 to 11,164 in 2013, an increase of 44.3%. In Wales there was an increase in GOS authorised optometrists of 13.5% from 681 in 2007 to 773 in 2013 (HSCIC, 2014). The number of GOS authorised optometrists in Northern Ireland rose from 506 in 2005 to 571 in 2013, an increase of 12.8% in that eight year period (HSC, 2013). In Scotland there was a 39% increase in overall numbers of optometrists on the GOC register from 2004 to 2012 from 898 to 1,208 (NES, 2013). However, without trend data on patterns of full-time or part-time working it is not possible to know how the FTE has increased over the same period.

Unfortunately the HSCIC has not conducted a similar investigation into how the number of dispensing opticians has changed in the four nations over the past decade. The only data is from Northern Ireland (HSC, 2013) where there was an increase in dispensing opticians from 25 in 2005 to 51 in 2013. GOC registration data showed a much lower increase of 9.1% in registered dispensing opticians in the UK as a whole from 5,723 in 2009 to 6,244 in 2013. Again, these are the number of registrants, not FTEs.

4.3.3 How has the optical workforce changed?

Gender: In 2003 the optometric workforce in England was 54.3% male and this had decreased to 47% by 2013. Females formed the majority of the workforce from 2009. In Wales the change has been slower: males comprised 54% of the workforce in 2003 and became the minority gender at 49.2% in 2013 (HSCIC, 2014). Currently Northern Ireland has the highest percentage of females (61%), followed by Scotland (60% female) where the previously reported 39% increase in the number of optometrists overall comprised a rise of 18% in the number of male and a 59% rise in female optometrists (NES, 2013).

The only source of combined UK gender data is the GOC register of optometrists for 2009-2013 which shows the optometry workforce as 56% female at the beginning and end of that period with minor fluctuations between individual years. This suggests that while the gender balance of the UK optometric workforce has certainly changed over time it has not changed significantly in the last five years since the OWS 2010 was conducted.

The GOC register of dispensing opticians was the only source of data on dispensing opticians available to the study team. Females have been the majority gender (2009-2013) but the percentage has fluctuated slightly over these five years and has fallen slightly from 59% to 57%.

Age: Table 11 reproduces GOC registration data on age and shows that the age profile of the optical workforce has changed recently. Between 2010 and 2012 just under 50% of optometrists were in the 25–39 years age bracket but this reduced to 43% in 2013. Conversely only 15% were aged 55 years and over but this increased by over 50% to 23% in 2013. The overall age distribution of dispensing opticians has also moved towards an older workforce but less markedly, with the percentage aged 55 years and over rising by a third from 15% to 20%.

A comparison of the OWS 2010 and the OWS 2015 data supports the hypothesis that the optometry workforce is ageing. In the 2010 survey of optometrists the mean age of respondents was 41 years, this rose to 45.33 years in 2015.

There is no comparative data for dispensing opticians; the OWS 2015 data found that the mean age of dispensing opticians was 47.54 years. However, this looks compatible with the GOC data which showed nearly 40% of dispensing opticians in the 40–54 years age range.

Table 11: GOC registration data (age of optical workforce registrants in years)

OPTOMETRISTS	25 OR UNDER	26–39	40–54	55+
2010	6%	48%	32%	15%
2011	6%	48%	31%	15%
2012	6%	48%	31%	15%
2013	5%	43%	28%	23%
DISPENSING OPTICIANS				
2010	3%	42%	41%	15%
2011	3%	42%	42%	14%
2012	3%	41%	40%	16%
2013	2%	38%	40%	20%

The small percentage of the workforce aged 25 years and under is notable for two reasons. First, the ratio of this age group with the over age 55 years group is 1:4.6 among optometrists and 1:10 among dispensing opticians. Unless the 25-39 years age group is weighted heavily towards the lower end of the scale i.e. 26-30 years, the figures suggest that the numbers of practitioners due to reach retirement age in the next 10 years are greater than the numbers of new entrants to the profession. In other words, there could be a net reduction in the optical workforce in the next 10 years.

Second, the number of optometry students has increased over the past decade; yet even if the actual numbers have increased, the proportion of registrants aged 25 years and under has decreased. The two factors combined suggest that if there is an oversupply of optometrists now or in the future, it is not necessarily due to the increased number of entrants to the profession. However, optometrists retiring later in life might be a contributing factor. Or, any perceived oversupply may be due simply to regional variations or to misperception.

Unfortunately national data from any source is not robust enough to test any of these hypotheses but these are areas that may be worth exploring in future studies.

Ethnicity: The GOC has started to request ethnicity data from registrants but the data set is incomplete and not up to date. In 2009 the GOC had ethnicity data on 12,098 registrants; this figure comprised dispensing opticians and optometrists and there is no breakdown of the two professional groups. 76.56% described themselves as White; 20.45% as Asian/Asian British; 1.47% as Chinese/Chinese British; 0.89% as Black/Black British; and 0.63% as Mixed Ethnicity.

This is comparable with the data from OWS 2010 where 77.1% of respondents described their ethnicity as UK/Irish/Other White ethnicity and 19.5% as Asian ethnicity. Five years on the current survey reported higher levels of White ethnicity among respondents, 82.7% of optometrists and 94% of dispensing opticians, although this could be due in part to interpretation of the question wording. A decrease of Asian or Asian British optometrists was contrary to the perceptions of stakeholders who were interviewed; many thought that an increased proportion of students and/or recently qualified optometrists were of Asian ethnicity. It is not possible, therefore, to conclude whether or not the ethnic composition of the optical workforce is changing.

Part-time working: In the 2015 optometrist survey 59.5% of respondents said they worked full time and 45.6% worked part time. Not all respondents provided personal data on age, gender, marital status or whether they had dependent children. Among those who provided this data 62.3% of respondents said they worked full time, 37.7% said they worked part time.

There were significant gender differences: women were more likely than men to work part time. Males comprised 54.4% of full-time respondents but only 24.3% of part-time workers. Reviewing data from the perspective of gender rather than employment status, the proportions of women who worked full time or part time were even, 50% and 50%.

35.3% of responding optometrists working full time have dependent children and 45.6% of part-time optometrists have dependent children. However, over half of optometrists who work part time do not have dependent children.

If the trend of increasing numbers of women in the profession continues, will there be a higher proportion of part-time optometrists? If this proves to be the case, maintaining the total number of registered optometrists at current levels would reduce workforce capacity as the FTE would decrease. Increasing the number of registered optometrists would not necessarily increase workforce capacity as this might be offset by a decrease in FTE. However, if respondents fulfil their stated career preferences in the next five years (see Table 7), then the number of hours and type of hours worked by both men and women (including decreasing hours; decreasing number of hours from full time to part time; and/or taking up flexible working patterns) would also change.

Part-time working was also associated with gender and parental responsibilities among dispensing opticians. Males comprised 55% of full-time respondents but only 24.5% of part-time workers. Reviewing data from the perspective of gender rather than employment status, the proportions of women who worked full time or part time were 61.2% and 38.8% respectively, so full-time working was more common among female dispensing opticians than female optometrists.

36.2% of dispensing opticians had dependent children; 63.8% did not. 37.9% of dispensing opticians with dependent children worked part time compared with 20.5% who had no dependent children.

Locum working: The 2010 survey found that 10.5% of optometrists worked as locums. The 2015 survey found that this had increased to 17.5% and that 9.5% of dispensing opticians worked primarily in a locum role. Stakeholders interviewed expressed particular concern at the numbers of newly registered optometrists apparently preferring to work as a locum rather than seeking regular employment. From a workforce capacity perspective there was a query whether this is because individuals have difficulty finding a post in their chosen area and choose locum work as an alternative to taking a regular post somewhere that they do not want to be. Some optometrists may simply prefer flexibility or variety in working arrangements.

4.3.4 Does workforce capacity have an impact on income?

In a simple economic model of supply and demand oversupply or under demand for a commodity will lower its value, and conversely, undersupply or excess demand will increase its value.

In the OWS 2010, 23.8% of respondents had an income of less than £30,000. This percentage rose to 31% of optometrists in the OWS 2015. However the percentage with an income of £30,000–£39,999 rose slightly from 24% to 26.4%. The percentages in the income band of £40,000–£49,999 were 24.3% in 2010 and 20.5% in 2015. In 2010, 27.8% earned more than £50,000 compared with 22.3% in 2015.

Based on this data it would appear that overall, optometrists' incomes had fallen slightly since 2010. However, the data on income does not take into consideration the number of hours worked. In 2010, 61.4% of respondents stated they worked full time and 37.3% worked part time. The percentage of full-time optometrists in 2015 was slightly lower (59.1%) so this could partly explain the income differences between surveys. However, there were differences between the two surveys in the way data were collected so it would be incautious to draw conclusions about income changes based solely on survey data. A recent article in the optical press (Ayling, 2015) reported that salaries among the highest earning optometrists grew by 1.3% last year but declined by 1.3% in central Scotland.

Among dispensing opticians the only available data on salary is from the OWS 2015 and a recent survey from a head hunting firm (Hunter Human Capital, 2015) which reported optometrist and dispensing optician salaries across Great Britain. The OWS 2015 found that the average income of respondents was between £26,000 and £30,000 but this was based on data from both full-time and part-time dispensing opticians.

The Hunter Human Capital report said that the average income for a full-time dispensing optician varied between £19,900 and £22,300 for someone with less than one year of experience rising to between £28,000 and £32,300 for someone with more than five years experience. The variations reflected regional differences, with the lowest starting salary in the Midlands and the highest in the South West and the South East of England, including Greater London.

There is no comparable data from five years ago on dispensing opticians so it is not possible to say whether income has changed in the past five years. However, the theory of supply and demand affecting salaries is unlikely to be as relevant for dispensing opticians, as optical sector interview stakeholders explained that companies are able to control supply by training as many practitioners as they need.

The same report (Hunter Human Capital, 2015) stated that the three factors that have the greatest effect on salaries for optometrists were 1) supply and demand; 2) number of years and type(s) of experience; and 3) calibre of professionals. However, they explained that the first of these is 'largely down to geography and whether or not you're based in an area of the country where demand for good people outweighs supply'. These findings support OWS 2015 stakeholder interview data about regional variations in optometrist supply and the impact this has on salaries. National companies said they offered additional benefits to try to encourage people to work in certain areas. Salaries for optometrists with less than one year's experience averaged £34,800 in South West England and £34,000 in South East England; compared with £28,400 in the central belt of Scotland; £30,600 in the West Midlands; and just over £30,000 in Wales and £31,000 in Greater London, all areas that are close to universities providing optometry courses.

The optometrists interviewed said that income was lower in real terms than it had been when they entered the profession. While some attributed this to a larger workforce, others put forward two additional drivers.

First, it was suggested that competing market forces, exacerbated by the dominance of national providers, might mean that income from dispensing optics was perceived as becoming less profitable than previously. Second, arrangements around paying optical professionals for an eye examination were suggested as having made an impact. According to the views of some stakeholders, the market was distorted by national retailers advertising 'free' eye examinations which were not free because this was either funded through the NHS or absorbed through dispensing. It was also believed by some that advertising free eye examinations led to the public undervaluing eye care. Furthermore the GOS fee for an NHS eye examination was believed to be insufficient to cover real costs, and made realistic fees for a private eye examination look high in comparison.

4.4 Optical workforce modelling and planning for the future

While supply and demand is often thought of as an economics concept it is a useful model for any situation where there is a demand or need for some kind of resource. In this case the resource is the optical workforce. Estimating the ideal number of optometrists for a particular population is difficult and contentious as a number of approaches can be used (Kiely et al., 2010). Amorim Lopes et al. described a range of methodologies for modelling supply and demand in healthcare workforce planning (Amorim Lopes et al., 2015).

In terms of supply, the following areas can be explored:

- **Entries and losses:** predicting the number of training entrants each year and comparing this with the predicted number of exits from the workforce, for example, through retirement;
- **Productivity:** ways that productivity (output) is likely to increase or decrease;
- **Skill mix:** in areas of interdisciplinary working such as eye care, the supply of one discipline can be increased or decreased by substituting tasks with another discipline;
- **Worker to population ratio:** this method looks at establishing a desired ratio for the number of optometrists or dispensing opticians per unit of population.

In terms of demand, the following methods can be used for modelling:

- **Need or potential demand:** this involves studying population and epidemiology changes such as changes in disease prevalence;
- **Economic or effective demand:** services actually contracted by the population or by agencies on their behalf;
- **Service targets:** combining a needs-based approach with other measures to establish service target ratios to be accomplished.

The following section of the report considers how these models can be applied to the optical workforce.

4.4.1 Entries and losses to the optical professions: The numbers of optometry students are determined by the universities, not employers. The main considerations for universities are to recruit students and for them to complete their course, with a low attrition rate. Academics in the stakeholder interviews explained how optometry was an attractive subject area for universities to offer courses in, as they are able to recruit full cohorts, the attrition and failure rates are low, and the graduate employment rate is high. If universities did wish to attempt to match new supply with demand they would need to plan several years ahead, as optometry is a three or four-year undergraduate course in most of the UK, followed by a pre-registration year. The universities have steadily increased their intakes over time and optometry student numbers have now been increased further with the introduction of new courses at Plymouth University (primarily to address undersupply in South West England) and at the University of Hertfordshire. While it is possible to quantify the level of supply by examining university statistics and data on pre-registration numbers, there is no systematic way of quantifying exits from the profession. There is GOC registration data but some professionals remain registered while not practising so looking at the numbers who leave the register is not a reliable measure.

The situation in dispensing optics is different to that in optometry in many ways. The qualitative arm of this study suggests that the majority of dispensing opticians start work in an optometric practice in an unqualified associate role, such as administrator or clinical assistant. Those who wish to progress seek support from an employer to train as a dispensing optician. The industry can balance supply and demand by recruiting unqualified staff then supporting them through training.

Surveys such as the OWS 2010 and the OWS 2015 can help with estimating anticipated exit from the professions by exploring things like five year career plans and FTE working, but such surveys must be well designed, robustly apply the principles of population sampling, and achieve high response rates to avoid sampling bias and response bias to produce findings that are generalizable from the survey samples to the wider population of optical professionals. Such surveys also benefit from good engagement from the professions, to enable effective response rates.

4.4.2 Productivity and skill mix: These methods of modelling workforces are considered together as it is possible that new technologies may emerge which would change how optical sector staff work within and across professions. For example, examination technologies may emerge which allow a case for dispensing opticians or other practice staff to take on some of the work currently carried out by optometrists. Similarly, administrative staff may perform tasks traditionally undertaken by the dispensing optician. Workforce demand could increase if optometrists can take on more of the work currently undertaken by ophthalmologists.

Appendix 1 (OWS 2015 optometrist questionnaire and results) and Appendix 2 (OWS 2015 dispensing optician questionnaire and results) each contain a table of responses to Question 35, which asked questionnaire respondents in both professions to indicate which type(s) of optical practice staff undertake a list of tasks in their primary place of work. These results demonstrated that there is a degree of crossover among members of the optical professions and the practice team. Until new technologies emerge and are embedded in practice, there is no way of assessing how these could impact on workforce capacity. However, there is little doubt that the rate and nature of change in the technology in eye healthcare over the preceding five years would suggest that this will be an important factor in the future, a view supported by considerable numbers of 2015 survey respondents: 38.8% of optometrists and 42.1% of dispensing opticians chose 'new technologies' as a factor which will influence their work in the next five years.

4.4.3 Worker to population ratio: In theory, the idea of planning workforce capacity based on population sounds sensible. The problem lies in not knowing what the ratio should be in the first place. In 2006, workforce researchers in New Zealand said that the ratio of equivalent full-time optometrists (EFTO) to the population was 1:7,517 and that it was 'sufficient to meet the overall population needs' (Frederikson et al., 2008). In Australia in 2005 the EFTO was 1:7,016 so fewer people to each optometrist, which the author concluded was 'adequate to meet the needs of the population' (Horton et al., 2006).

The HSCIC used a different way to report optometrist to population ratios by stating the number of optometrists per 100,000 population (HSCIC, 2014). In 2013 there were 21.4 optometrists per 100,000 population in England; 29.8 per 100,000 in Northern Ireland; and 25.4 per 100,000 in Wales. These translate to population ratios of 1 to 4,673 in England; 1 to 3,356 in Northern Ireland; and 1 to 3,937 in Wales. These are registered optometrists, not EFTOs or FTEs but the figures still look high in comparison to Australia and New Zealand. Yet in 2015 when OWS respondents were asked to comment on their perceptions of undersupply or oversupply in their local area, less than a quarter (22.7%) thought there was a current oversupply and 14.9% thought there was a current shortage.

The data used to create Maps 4 and 5 in this project correlate to the population ratios described in Table 12.

Table 12: population ratios based on data used to create Maps 4 and 5 in the OWS 2015 (population per 1 optometrist and 1 dispensing optician)

	OPTOMETRISTS	DISPENSING OPTICIANS
England	4,700	10,201
Northern Ireland	3,109	28,125
Scotland	3,732	13,972
Wales	4,531	13,651

Therefore, it would appear that more work needs to be done before relying on worker to population ratios and that there is also a need to look at regional ratios, not just national ratios.

4.4.4 Need or potential demand: The need for eye healthcare is universal in that everyone should have their sight tested and the health of their eyes checked on a regular basis. In addition, many people require some form of corrective lenses and the risk of developing conditions that can lead to visual impairment increases with age. Therefore, population figures can be used to calculate need or potential demand.

This is an approach that has been used in other eye healthcare capacity studies. The US National Eye Care Study (The Lewin Group, 2014b) also included population demand projections in its modelling of workforce capacity. An Australian study used Medicare data to calculate the average time required for various types of consultation: 45 minutes for a first visit, 15 minutes for subsequent visits, and 60 minutes for a contact lens consultation. This included time spent on administration related to the consultation and on clinical matters such as referral letters and ordering lenses (Horton et al., 2006).

In the absence of similar data in the UK, a simplified approach would be to take an average consultation time and use it to calculate the capacity of an individual optometrist then apply this to the population using a number of assumptions.

- According to OWS 2015 data, the average amount of time that optometrists spend on an individual patient consultation is 30 minutes.
- If it is assumed that a FTE optometrist spends 30 hours on direct patient contact per week this would enable them to carry out 60 consultations per week.
- If it is assumed that an optometrist works 45 weeks per year, they could theoretically conduct 2,700 consultations per year (45 x 60 = 2,700).

The estimated population of the UK is 64.1 million (ONS, 2013). If everyone has one consultation per year, this would require 23,740 optometrists. But not everyone requires an annual consultation so the actual need is lower than this. Taking into account certain assumptions about the population will produce different outcomes.

- If everyone has an eye examination every two years (Department of Health, 2002) a population of 64.1 million would create a need for 32.05 million consultations per year (32.05 million divided by 2,700 = 11,870 optometrists).

But the population comprises proportions of people in age groups where eye examinations are usually conducted more or less frequently, i.e. the elderly and the very young. People over the age of 70 are often advised to have an annual examination. Children can have an eye examination from an early age and it is usually advised that they should at least have their eyes examined before the start of school. Applying these assumptions to the ONS 2013 population estimates produces the following data:

- There are an estimated 7,653,540 people in the UK aged 70 years and over. An annual consultation for this group would require 2,835 optometrists (7,653,540 divided by 2,700).
- 6.31% of the UK population (4,044,710) are children aged 0 to 4 years. Examining them once in four years would require 375 optometrists (4,044,710 divided by four divided by 2,700).
- An eye examination every two years for the remaining population of 52,401,750 people aged 5 to 69 years would require 9,704 optometrists (52,401,750 divided by two divided by 2,700).
- Meeting the needs of the UK population would require 12,912 FTE optometrists (2,835 + 375 + 9,704).

As a reminder, the current total optometrist FTE for the whole UK calculated in section 4.3.1 was 12,099.

This is clearly a highly simplified approach and the number of required FTE optometrists would change with every modification. A proportion of the population does not have a regular eye examination so this reduces the actual demand, though not the potential need. Adding into the equation the proportion of the older population who have a condition requiring a longer consultation time or more frequent consultations increases the need. Calculations about practitioner sickness, parental leave or career breaks would reveal the need for additional practitioners.

The additional types of need or demand identified by Amorim Lopes et al. can impact further on workforce planning. Economic or effective demand through services actually contracted by the population or by agencies on their behalf can take the form of consumer/patient driven demand or government demand, with the latter incorporating the additional need of service targets.

Consumer demand may increase for a range of reasons. Stakeholders interviewed for this study reported increasing numbers of people using spectacles as a fashion accessory, ordering several pairs of spectacles at one time or regularly changing frames to keep up with fashion. A study by the College revealed the low level of contact lens wear by children and young people (College of Optometrists, 2014): this is a potential area of growth and would require more contact lens dispensers, particularly with growing evidence that specialised contact lenses may offer scope to reduce/limit the degree of myopia developed in a significant number of children. Patients may seek an optometric consultation in response to media reports highlighting the risk of eye conditions or new treatments, or they may visit their optometrist for minor eye conditions because they are having difficulty getting an appointment with their GP.

Optometrists are increasingly involved in locally commissioned enhanced services schemes (ESS), also known as community schemes. These schemes monitor long-term conditions such as glaucoma and diabetic retinopathy or provide acute eye care services to treat minor eye conditions and provide emergency assessment and referral. A key benefit of these community services is a reduction in referral rates to GPs, A&E and hospital eye departments, but they increase the workload of optometric practices. Since April 2013, CCGs have been responsible for designing and implementing new local eye health services and reviewing existing enhanced services (LOCSU, 2013) so there is the potential for this area of optometric practice to grow further. When the ageing population and shortages in ophthalmologists are added to the equation, subsequent impacts on the optical workforce are predictable but not yet quantifiable (Centre for Workforce Intelligence, 2014).

4.4.5 Summary: There are numerous supply and demand factors with the potential to impact on the optical workforce capacity. Optical workforce modelling and planning for the future requires detailed information about the eye healthcare needs of the population and the capacity of optical practitioners to meet those needs. However, modelling and planning must be regularly reviewed in light of new technologies, methods of examination, and changes to healthcare policy or health service delivery models.

5 Concluding remarks

The Optical Workforce Survey 2015 is the latest iteration of a planned programme of regular surveys conducted by the College to describe the characteristics of the optical workforce. It provides information on the optometrist and dispensing optician workforces in the UK in relation to personal characteristics, work profiles, education, training and professional development and job satisfaction. The survey findings support evidence from other sources regarding gender composition of the optical workforce and point to some possible implications of changing gender demographics for workforce capacity.

The survey findings were enhanced by the addition of a qualitative component. Interviews with a range of stakeholders – practitioners, employers, students, academics, professional bodies and from a 'four nations' perspective – provided insights that could not be derived from questionnaires. It was not envisaged that OWS 2015 study data would provide definitive answers to background questions about the level of any undersupply or oversupply of the optical workforce. However, one primary objective of the study was to assess the potential and limitations of existing data to quantify the current optometric and dispensing optician workforces.

GOC registration data states how many professionals are registered to practise, not how many are actively practising or how many hours they work. Neither the regulator nor professional bodies or associations have comprehensive equality and diversity data to measure changes to the workforce arising from age and gender distribution. There is no data from employers about the size of the target workforce or the level of vacancies or planned new positions. Closer cross-sector cooperation is needed to collect and collate this information.

But supply is only one side of the equation. Quantifying demand starts with an understanding of the population and how it is changing. An ageing population is frequently cited as placing increasing demands on healthcare services and applying data on the prevalence of conditions which can cause visual impairment to population estimates will help to predict how demands for eye healthcare will increase.

Optometry and dispensing optics do not exist in a vacuum. They are subject to changes in the healthcare systems which are impacted by new and emerging technologies, local and national policy and commissioning, and shifts in the wider healthcare workforce. In a dynamic environment, optical workforce capacity must be regularly reviewed.

Irrespective of whether the optical workforce is sufficient, undersupplied or oversupplied, this study has highlighted inequalities in the distribution of optometrists. According to qualitative interview data, optometry courses may attract a high proportion of entrants from the surrounding geographical areas around their respective universities. At the end of their course, many optometry students seek a pre-registration placement close to home or are offered a placement at a practice where they had undertaken workplace experience as a student. The survey found that half of graduates remain at the practice at the end of the pre-registration year. Data from qualitative interviews indicates that these students put down roots and some are reluctant to relocate to another area because of family considerations. This may result in the geographical areas surrounding universities providing optometry courses having a continuous and more than adequate supply of optometrists. Areas where there is no optometry course are largely reliant on the small numbers of students who come from the area returning to that area and on employers offering enhanced remuneration packages to attract optometrists to relocate.

There is no simple solution to effective optical workforce assessment and planning in the UK. It may not be possible or feasible for universities to try to increase the geographical diversity of student intakes by taking fewer local entrants and actively encouraging entrants from further away. Opening new schools of optometry requires considerable resources and while it might help to attract entrants from more geographical areas, it could lead to an overall oversupply situation unless existing schools reduced their intakes.

In addition to opening new schools of optometry, a second approach would be to find ways to encourage more graduates to undertake a pre-registration placement in areas where there are shortages, but the current salary levels would have to increase significantly to attract candidates. A third approach is to try to encourage more optometry students from the areas of low supply, but with the high costs of a university education many students opt to stay in the parental home while studying.

Just as cross-sector cooperation is needed to improve data to inform workforce planning, promoting equal workforce capacity in all regions of the UK requires all parties to work together. Until then there is a risk that some populations will be disadvantaged in terms of eye healthcare. If this is the case, the first objective of workforce planning will not be achieved: having the *right number*, in the *right place*, at the *right time*, with the *right skills* to provide the *right services*.

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Appendix 1

Optometrist questionnaire and results

SECTION 1: Education, Training, and Professional Development

Q1 In which year did you receive your undergraduate degree/qualification in optometry?

Responses ranged from 1961 to 2014, i.e. between 1 and 54 years ago.
11.7% had graduated in the last 5 years.

Q2 At which university or training institution did you receive your undergraduate degree/qualification in optometry?

1.9%	Anglia Ruskin University
21.2%	Aston University
13.4%	University of Bradford
13.1%	Cardiff University
18.7%	City University
11.7%	Glasgow Caledonian University
None	Plymouth University
14.5%	University of Manchester
3.4%	University of Ulster
2.0%	Other

Q3 In which year did you first register as a fully qualified optometrist with the General Optical Council (GOC)? Please do not include registration as a student optometrist.

Responses ranged between 1964 and 2014.
14.6% had first registered within the last 5 years.

Q4 How long did it take you to find your first job as an optometrist following your first GOC registration as a fully qualified optometrist?

47.2%	N/A: continued working at pre-registration practice
21.1%	N/A: transferred to another practice with the same employer
28.2%	Less than 1 month
2.8%	1 to 3 months
0.2%	4 to 6 months
0.3%	7 months to 1 year
0.2%	Over 1 year

Q5 Do you hold any other qualifications or professional affiliations? If YES, please select all that apply.

23.1%	None
0.7%	ABDO (Hons) LVA
5.2%	Bachelor's degree in subject other than optometry
7.3%	City & Guilds (Diabetic Retinopathy Screening)
3.3%	DipCLP
0.3%	DipOrth
0.2%	DipOc
1.3%	DipGlau
0.2%	DipRVI
0.8%	DipTPAS
0.3%	DipTPSP
4.7%	DipTP (IP)
1.0%	DOpt
0.8%	FAAO
1.1%	FADO
0.2%	FADO (CL)
0.2%	FAOI
3.9%	FBDO
0.7%	FBLCA
0.8%	FBDO (CL)
0.2%	FDBO (Hons) LVA
12.9%	FCOptom
0.3%	FEAOO
4.1%	Higher qualification in optometry
1.0%	Master's degree in health subject (other than optometry)
0.7%	Master's degree in business subject
0.7%	Master's degree in subject other than optometry, health, or business
51.1%	MCOptom
0.7%	MOptom
2.6%	PhD in Optometry, Vision Science, or Optics
0%	PhD in other health-related discipline
0%	PhD in business-related discipline
0%	PhD in subject other than optometry, health, or business
0%	SMCTech
10.9%	Other – please specify:

Q6 Are you currently studying for any qualifications?

11.6%	Yes
88.4%	No

If YES, please specify
Main responses: Independent prescribing (2.7%); Master's degree (1.8%); PhD (1.7%); Professional doctorate (1%)

Q7 Since the year of your first GOC registration as a fully qualified optometrist, have you taken a career break of 6 months or more, after which you returned to optometry? This may have been for reasons of parental/family leave, to pursue postgraduate or further education, to travel, for sabbatical, or for medical/personal reasons. If NO, please go to Q11.

26.1%	Yes
73.9%	No

Q8 If YES to Q7, how long was the break for, and what was the reason?

Main reasons: Maternity or parental leave or to bring up children (72%); Travel/working abroad (21%); Medical (5%).

Q9 If YES to Q7, did you come off the GOC register during this career break?

5.6%	Yes
94.4%	No

Q10 If YES to Q9, which of the following would best describe your experience of returning to registration?

NB: percentages based on 10 relevant responses.

40%	Very simple, no problems at all
30%	Not too difficult
20%	Time-consuming and frustrating
10%	Almost impossible, I nearly gave up

SECTION 2: Training and Professional Development

Q11 In the past year, what is the number of professional conferences or training events you have attended?

Ranged between 0 and 36. 59.3% attended between 1 and 3. Mean=3.59; SD 3.189; Median=3; Mode = 2

Q12 Have you ever undertaken any overseas work, volunteer activity, training or fellowships?

17.8%	Yes
82.2%	No

If YES, please specify:

Examples given of voluntary work all over the world.

Q13 Have you used any of the following sources of Continuing Education and Training (CET) and Continuing Professional Development (CPD)? Please select all that apply.

3.2%	ABDO events
40.4%	AOP events
47.4%	CET conference arranged by employer
53%	CET/training arranged by manufacturer
40.6%	College of Optometrists regional events
16.6%	College of Optometrists annual conference (Optometry Tomorrow or Bitesize)
47.8%	Directorate of Optometric Continuing Education and Training (DOCET) materials
19.6%	Employer journal/magazine
59.7%	Local Optical Committee (LOC) events
9.4%	NHS Education for Scotland (NES) optometry courses
49%	Optician
45.5%	Optometry in Practice CET
78.6%	Optometry Today CET
60.7%	Peer review (organised by a CET/CPD provider)
35.8%	Peer review organised by a colleague or you
7.3%	Regional Optical Committee (ROC) events
19.6%	Wales Optometric Postgraduate Education Centre (WOPEC)
4.3%	Other
0%	None of the above

Q14 Do you have a special interest in a particular area of optometry?

42.7%	Yes
57.3%	No

Areas of special interest:

Glaucoma	n=52
Contact lenses	n=49
Children	n=47
Low vision	n=29
Diabetes	n=26
Therapeutics	n=19
Macular	n=12
Binocular vision	n=11
Dry eye	n=10
Pathology	n=10
Medical retina	n=8
Independent and supplementary prescribing	n=7
Older people	n=7
Colorimetry	n=6
Domiciliary	n=6
Learning disability	n=6
Anterior eye	n=5
Behavioural optometry	n=4
Cataract	n=4
Dyslexia	n=4
Refractive surgery	n=4
Other	n=61

Q15 If you answered YES to Q14, do you wish to undertake further training related to your area of special interest?

69%	Yes
31%	No

Q16 If you do not currently have a special interest in a particular area of optometry, would you be interested in further training to enable you to develop a special interest?

53%	Yes
47%	No

Q17 If you do not currently have an area of particular interest, or are not interested in developing one, please specify which of the reasons below has had the greatest influence on this.

29.5%	Family circumstances
9.1%	Financial constraints
16.1%	Work commitments
36.4%	I am happy with my current scope/level of practice
8.7%	Other (Main reasons: age and nearing retirement)

Q18 Have you had an appraisal of your clinical skills in the last 12 months?

55.6%	Yes
44.4%	No

If NO, please explain the reason(s) why:

Main reasons: self employed/lone worker/locum/no one to do an appraisal; not offered by employer; not considered

Q19 Do you feel that your clinical skills are continuously being developed?

93.3%	Yes
6.7%	No

If NO, please explain the reason(s) why:

Main reasons: time; relevance of training available; motivation

Q20 Do you participate in the supervision of pre-registration optometrists?

26.8%	Yes
73.2%	No

If YES, how many pre-registration optometrists have you supervised in the last 12 months

Usually 1 or 2

Q21 Do you access the internet at work through a device provided by your primary employer?

72.6%	Yes
27.4%	No

Q22 Do you access the internet at work through your own personal mobile device?

69.5%	Yes
30.5%	No

Q23 If you use the internet at work, what do you use it for? Please select all that apply.

71%	Access clinical guidance
58.3%	Communication with colleagues
36.2%	New clinical developments
53.4%	Optical news and information
55.8%	Professional development
18.1%	Other

Q24 Do you consider any of the following to be important for your professional development? Please select all that apply.

67.2%	Links with Local or Regional Optical Committees
64.4%	Peer support schemes/mentoring
42.3%	Links with local academic/training institutions
31.8%	Links with community low vision support services
41.5%	Membership of local optical society
59.8%	Links with health professionals (outside of optical workforce) across primary care

SECTION 3: Workplace and Clinical Profile

Q25 What is your employment status? Please select all that apply.

39.3%	Employed Full-time
22.9%	Employed Part-time
20.2%	Self-Employed Full-time
22.7%	Self-Employed Part-time
0.3%	Retired
0%	Unemployed
2.5%	Other

Q26 What is the postcode of your primary workplace or clinical practice? Please provide only the first half of your postcode. For example, if your postcode is WC2N 5NG, please enter WC2N. If you are self-employed or a locum, please use residential postcode.

Individual responses

Q27 Please categorise the location of your primary workplace or clinical practice.

29.5%	City
60.9%	Town
7.7%	Rural
1.8%	Other

Q28 What do you consider to be your primary clinical or non-clinical role? Please select one.

16.4%	Practice owner: 1 practice (not affiliated with a regional/national optometric/optical company)
8.0%	Practice owner: small group (2-4 practice sites, not affiliated with a regional/national optometric/optical company)
1.5%	Practice owner: medium group (5 or more practice sites, not affiliated with a regional/national optometric/optical company)
1.0%	Franchisee: 1 practice affiliated with a regional optometric/optical company
4.1%	Franchisee: 1 practice affiliated with a national optometric/optical company
0%	Franchisee: multiple practices affiliated with a regional optometric/optical company
2.1%	Franchisee: multiple practices affiliated with a national optometric/optical company
5.7%	Locum: multiple practice
11.6%	Locum: independent practice
4.1%	Employed: by an optometry/optical practice (not affiliated with a regional/national optometric/optical company)
5.7%	Employed: by a small group optometry/optical practice (2-4 practice sites, not affiliated with a regional/national optometric/optical company)
5.3%	Employed: by a medium group (5 or more practice sites, not affiliated with a regional/national optometric/optical company)
1.2%	Employed: by an optometric practice affiliated with a regional optometric/optical company
8.4%	Employed: by an optometric practice affiliated with a national optometric/optical company
6.3%	Employed by a hospital/clinic/other multidisciplinary
0%	Employed by a community health centre
0.2%	Employed by a regional optometric/optical company
12.5%	Employed by a national optometric/optical company
0%	Employed by optical/ophthalmic manufacturer or wholesaler
1.0%	Employed in a domiciliary role
2.2%	Employed by an educational institution
0.2%	Employed by local/other/government
0%	Retired
0%	Unemployed
2.5%	Other

Q29 How many hours per week do you spend in your primary role?

Responses ranged between 2 and 60 hours

Q30 If applicable, in your primary practice setting, how many minutes on average do you spend per patient, per sight test?

Responses ranged between 15 and 120 minutes

Q31 In addition to your primary clinical or non-clinical role, do you have any other roles? Please select all that apply.

7.2%	Practice owner: 1 practice (not affiliated with a regional/national optometric/optical company)
5.5%	Practice owner: small group (2-4 practice sites, not affiliated with a regional/national optometric/optical company)
0.5%	Practice owner: medium group (5 or more practice sites, not affiliated with a regional/national optometric/optical company)
0.2%	Franchisee: 1 practice affiliated with a regional optometric/optical company
3.3%	Franchisee: 1 practice affiliated with a national optometric/optical company
0.2%	Franchisee: multiple practices affiliated with a regional optometric/optical company
1.7%	Franchisee: multiple practices affiliated with a national optometric/optical company
7.9%	Locum: multiple practice
13.2%	Locum: independent practice
1.4%	Employed: by an optometry/optical practice (not affiliated with a regional/national optometric/optical company)
0.7%	Employed: by a small group optometry/optical practice (2-4 practice sites, not affiliated with a regional/national optometric/optical company)
0%	Employed: by a medium group (5 or more practice sites, not affiliated with a regional/national optometric/optical company)
0.2%	Employed: by an optometric practice affiliated with a regional optometric/optical company
1.0%	Employed: by an optometric practice affiliated with a national optometric/optical company
5.3%	Employed by a hospital/clinic/other multidisciplinary
0.5%	Employed by a community health centre
0.7%	Employed by a regional optometric/optical company
1.4%	Employed by a national optometric/optical company
0.2%	Employed by optical/ophthalmic manufacturer or wholesaler
1.2%	Employed in a domiciliary role
4.5%	Employed by an educational institution
0%	Employed by local/other/government
13.7%	Other

Q32 If applicable, how many hours per week do you spend in your other role(s)/practice settings?

0 to 48 hours

Q33 If applicable, in your other role/practice setting, how many minutes do you spend per patient, per sight test?

0 to 90 minutes

Q34 Across all roles and practice settings, how many hours per week do you spend on the following activities? Please enter the number of hours spent on each activity. If not applicable, please enter 0.

ACTIVITY	HOURS PER WEEK
Patient contact time as an optometrist	0 – 51
Patient-related paperwork	0 – 40
On call for after hours care	0 – 50
Practice administration	0 – 8
Business management activities	0 – 60
Staff training	0 – 20
Professional development	0 – 32
Other	0 – 30

Q35 We are interested to understand what you and your colleagues do across the practice settings where you work regularly. If applicable, for each type of professional, please select all activities that apply.

	Admin or reception staff	Contact Lens Opticians (CLO)	Dispensing Opticians, excluding CLO	Optical Assistants	Ophthalmic Medical Practitioner	Ophthalmologist	Optometrist	Orthoptist
Taking patient details	80.7%	6.7%	25.7%	44.0%	0.7%	0.8%	39.6%	0.8%
Visual fields tests	23.7%	3.7%	24.2%	49.5%	0.5%	0.2%	65.3%	1.8%
Non-contact IOPs	12.6%	1.7%	10.2%	30.5%	0.8%	0.8%	72.0%	0.2%
Retinal photography	14.8%	2.3%	16.1%	38.9%	0.7%	0.2%	64.1%	0.5%
OCT	3.4%	0.5%	3.9%	8.4%	0.5%	0.8%	22.1%	0.8%
Optomap	1.3%	0%	1.8%	3.9%	0.7%	0.6%	6.0%	0%
Glazing	5.0%	0.7%	15.9%	18.3%	0%	0%	6.2%	0%
Teaching insertion and removal of contact lenses (CL)	16.1%	19.8%	20.6%	47.1%	0.2%	0.4%	57.0%	0%
Fitting CL	0.2%	27.7%	0.7%	0%	0.2%	0.4%	88.8%	0%
Supplying CL to patients under 16	1.8%	26.5%	5.7%	2.5%	0%	0.4%	88.6%	0.2%
Supplying CL to patients age 16 and over	8.2%	26.8%	9.6%	12.1%	0.5%	0.5%	84.6%	0%
Dispensing spectacles to patients under 16	1.5%	12.2%	62.4%	8.2%	0.2%	0.2%	70.6%	0%
Dispensing spectacles to patients age 16 and over	11.6%	15.1%	49.0%	40.4%	0.8%	0.5%	58.9%	0%
Working with patients with low vision	0.5%	2.2%	23.3%	3.0%	0.5%	2.0%	75.8%	0.8%
Working with patients with minor eye conditions	0.7%	9.2%	4.9%	1.5%	1.3%	4.2%	88.1%	1.0%
Colorimetry/tints for dyslexia	0.5%	0.3%	5.9%	2.0%	0%	0.3%	29.7%	2.7%
Smoking cessation	1.0%	0.3%	1.5%	2.0%	0.8%	1.0%	17.3%	0.5%

Q36 What is your total annual income from work related to optometry (GBP gross income before tax, for the tax year ending April 2014)? Please enter figure to the nearest £1,000.

£3,000 to £450,000 per year. Mean = £44,328; SD £33,562. Median £39,500; mode £40,000

SECTION 4: Job Satisfaction

Q37 Please rate your satisfaction with individual job factors on a 7-point scale ranging from 1 (Extremely dissatisfied) to 7 (Extremely satisfied).

	1	2	3	4	5	6	7
Physical working conditions	1.2%	2.6%	4.1%	9.2%	26.3%	36.9%	19.8%
Level of autonomy/independence in your job	2.1%	2.2%	4.5%	7.4%	18.0%	32.5%	33.4%
Colleagues and fellow workers	1.0%	1.5%	3.4%	8.6%	24.4%	38.1%	22.9%
Recognition you receive for good work	3.8%	5.2%	7.4%	17.1%	24.5%	25.3%	16.7%
Amount of responsibility you are given	1.7%	0.9%	4.3%	9.1%	17.7%	35.5%	30.9%
Remuneration	3.4%	5.3%	10.1%	15.6%	24.6%	25.9%	14.9%
Opportunity to use your abilities	2.2%	2.9%	4.3%	11.3%	21.0%	33.7%	24.6%
Hours of work	1.7%	3.8%	6.3%	12.6%	22.2%	30.8%	22.6%
Amount of variety in your job	2.1%	5.8%	6.2%	13.9%	19.9%	28.4%	23.8%
Overall job satisfaction	1.2%	3.6%	6.3%	8.7%	23.9%	36.2%	20.1%

Q38 What most attracted you to your current position? Please select one only.

14.4%	Financial reasons (high wages, great benefits, etc.)
23.2%	Family circumstances (proximity to relatives, schools, etc.)
23.6%	Career advancement (opportunity for own practice, extended role, etc.)
18.3%	Opportunity to develop professionally (new patient groups, different practice setting, opportunity to learn new skills)
3.0%	It was the only role I could find
17.5%	Other

Q39 What are your career preferences within the next 5 years? Please select all that apply.

45.7%	Flexible working
6.0%	Career break
14.6%	Leadership role
4.6%	Move to a role at a practice (independent)
1.5%	Move to a role at a practice (franchise)
5.3%	Move to an academic role (research or teaching)
6.2%	Move to a hospital role
5.3%	Move to a locum role
1.0%	Move to a domiciliary role
28.6%	Professional development or training in area of special interest
15.6%	Formal qualification or higher degree in area of special interest
5.8%	Establish a practice (independent)
2.9%	Establish a practice (franchise)
6.3%	Engagement in research
6.5%	Overseas work
9.8%	Charity, community work
4.8%	Increase work hours related to optometry practice
1.2%	Increase work hours related to optometry practice from part time to full time
24.3%	Decrease work hours related to optometry practice
11.1%	Decrease work hours related to optometry practice from full time to part time
3.9%	Leave current practice and relocate to another area
4.5%	Leave current practice and stay in the same area
7.7%	Leave optometry
0.5%	Leave direct patient care
1.0%	Leave healthcare work entirely
21.7%	Retirement plans

Q40 If your career preferences in the next 5 years include to 'leave optometry,' please explain why.

Individual responses

Q41 Which of these job satisfaction factors are important to you? Please select all that apply.

63.7%	Physical working conditions
69.4%	Level of autonomy/independence in your job
75.5%	Colleagues and fellow workers
60.0%	Recognition you receive for good work
44.0%	Amount of responsibility you are given
68.3%	Remuneration
61.0%	Opportunity to use your abilities
68.7%	Hours of work
55.2%	Amount of variety in your job
77.9%	Overall job satisfaction
1.9%	Other

Q42 Please choose the job satisfaction factor that is most important to you. Please select one only.

2.6%	Physical working conditions
13.0%	Level of autonomy/independence in your job
9.2%	Colleagues and fellow workers
7.6%	Recognition you receive for good work
0.5%	Amount of responsibility you are given
8.8%	Remuneration
11.8%	Opportunity to use your abilities
6.2%	Hours of work
6.1%	Amount of variety in your job
33.6%	Overall job satisfaction
0.7%	Other (please specify):

Q43 At which age do you plan to retire?

Responses ranged from 24 to 85 years.
80% stated plans to retire by the age of 65 years.

SECTION 5: Comments/Recommendations

Q44 Based on your experience and observations, please give your opinion on the current optometry workforce in your local area in terms of its adequacy for current demands and likely capacity to meet future requirements. Please select all that apply.

31.9%	Adequate for current and future demands
14.9%	Current shortage of workforce
22.7%	Current oversupply of workforce
2.9%	Shortage of workforce in the next 5 years
21.9%	Oversupply of workforce in the next 5 years
15.0%	Don't know
2.6%	Other

Q45 Which of the factors below will influence your work in the next 5 years? Please select all that apply.

47.4%	Advances in treatment for eye disease
57.9%	Ageing population
35.9%	Changing public health priorities
44.5%	Contractual arrangements/funding
40.2%	Local policies
30.8%	My individual working environment
67.0%	My personal circumstances
25.1%	National policies
38.8%	New technologies
4.1%	Other

Q46 In your opinion, which of these factors will be the biggest influence on your work in the next 5 years? Please select only one.

5.7%	Advances in treatment for eye disease
14.7%	Ageing population
5.0%	Changing public health priorities
12.2%	Contractual arrangements/funding
5.9%	Local policies
7.2%	My individual working environment
37.4%	My personal circumstances
3.4%	National policies
3.1%	New technologies
5.4%	Other

Q47 We would like to give you the opportunity to provide any additional comments on the optical workforce.

Individual responses

SECTION 6: Personal Profile

Q48 Age (in full years)

Ranged between 22 and 74 years.
Mean = 45.3 years; SD 12.9.
Median = 47 years.
Mode = 60 years.

Q49 Gender

41.7%	Male
57.5%	Female
0.2%	Transgender
0.6%	I prefer not to answer

Q50 Ethnicity

76.4%	English/Northern Irish/Scottish/Welsh
2.4%	Irish
0.7%	Any other white background (please specify below)
10.0%	Asian or Asian British: Indian
2.4%	Asian or Asian British: Pakistani
0.3%	Asian or Asian British: Bangladeshi
0.7%	Asian or Asian British: Chinese
3.5%	I do not wish to declare my ethnic background
1.0%	Any other Asian background
0.2%	Black or Black British: African
0.2%	Black or Black British: Caribbean
0%	Any other Black/African/Caribbean background
0.5%	Mixed ethnic groups
1.2%	Any other ethnic background
1.2%	Any other ethnic background

SECTION 7: Geography

Q51 Citizenship (please include dual citizenship if applicable)

95.8%	British
2.2%	Irish
0.4%	EU
1.6%	Other

Q52 Country of birth

66.0%	England
10.2%	Northern Ireland
9.0%	Scotland
6.0%	Wales
8.8%	Other (please specify):

Q53 Country of residence

77.0%	England
10.9%	Scotland
6.2%	Wales
5.7%	Northern Ireland
0.2%	Other

Q54 What is your residential postcode? Please provide only the first half of your postcode. For example, if your postcode is WC2N 5NG, please enter WC2N.

Individual responses

Q55 Please categorise the place where you live.

28.4%	City
43.8%	Town
27.0%	Rural
0.8%	Other

Q56 How far is your residence from your current primary workplace? Please provide your answer in miles.

Range: 0 – 567 miles. Mean = 15.28 miles; SD 34.5 miles. Median = 9 miles

Q57 How many miles do you travel per week for work?

0 – 1,000s

Q58 How far is your current primary clinical workplace from the place you grew up?

15.1%	Another country
47.2%	Another county within the same country
34.9%	The same county/city
2.8%	Other

Q59 If you have ever moved to another country or county within the same country, what was the main reason for that?

36.6%	Job opportunity
12.7%	Further education
7.3%	Opportunity to establish own practice
35.0%	Family circumstances
8.3%	Other

SECTION 8: Family

Q60 What is your marital status?

18.5%	Single
0.5%	Widowed
7.7%	Separated or divorced
73.3%	Married or civil partnership

Q61 If applicable, what is your partner's employment status?

45.3%	Full-time
17.3%	Part-time
0.6%	Casual
6.7%	Retired
2.2%	Not employed
23.0%	Not applicable
1.9%	I prefer not to answer
2.9%	Other

Q62 Do you have any dependent children? Dependent children are persons aged under 16 or single persons aged 16 to 18 and in full-time education.

39.5%	Yes
60.5%	No

Q63 If you have dependent children, please specify the number of children in each age bracket.

No. of children age 0-5	1 child: 9.2%; 2 children: 3.6%; 3 children: 0.2%; 4 children: 0.2%
No. of children age 6-11	1 child: 8.1%; 2 children: 3.9%; 3 children: 0.3%
No. of children age 12-15	1 child: 10.5%; 2 children: 4.1%

Q64 Have any members of your family worked in eye care or in an eye care related business, charity, or special education organisation?

32.4%	Yes
67.6%	No

SECTION 9: Health

Q65 Do you have any disabilities?
The Equality Act (2010) states that a person has a disability if – (a) the person has a physical or mental impairment, and (b) the impairment has a substantial and long-term adverse effect on the person's ability to carry out normal day-to-day activities. 'Long term' usually means the impairment should have lasted or be expected to last at least one year.

1.5%	Yes
97.6%	No
0.9%	I prefer not to answer

Q66 If you have a disability, do you require personal care or support at work as a result of your disability?

55%	Yes
45%	No

Q67 How would you assess your health as compared with other people of your age?

1.0%	Poor
10.6%	Medium
49.4%	Good
39%	Excellent

Appendix 2

Dispensing Optician questionnaire and results

SECTION 1: Education, Training, and Professional Development

Q1 In which year did you receive your qualification in dispensing optics?

Responses ranged from 1962 to 2014 i.e. between 1 and 53 years ago.
12.7% had graduated in the last 5 years.

Q2 At which university or training institution did you receive your undergraduate degree/qualification in dispensing optics?

9.7%	Anglia Ruskin University
21.0%	Association of British Dispensing Opticians (ABDO) DLI College
20.6%	Bradford College
1.6%	City University
38.5%	City and Islington College
4.3%	Glasgow Caledonian University
4.3%	Other

Q3 In which year did you first register as a fully qualified dispensing optician with the General Optical Council (GOC)? Please do not include registration as a student.

Responses ranged between 1964 and 2014.
11.1% had first registered within the last 5 years.

Q4 How long did it take you to find your first job as a dispensing optician or contact lens optician following your first GOC registration as a fully qualified optician?

74.2%	N/A: continued working at pre-registration practice
7.8%	N/A: transferred to another practice with the same employer
12.7%	Less than 1 month
3.5%	1 to 3 months
1.4%	4 to 6 months
0.2%	7 months to 1 year
0.2%	Over 1 year

Q5 Which qualifications do you hold?

0.2%	None
2.1%	Bachelor's degree in optometry
11.4%	Bachelor's degree in subject other than optometry
1.7%	BTEC
2.4%	Certificate
5.7%	Diploma
79.4%	Fellowship Diploma of the Association of British Dispensing Opticians (FBDO)
10.7%	Honours Fellowship Diploma of the Association of British Dispensing Opticians (FBDO Hons)
16.6%	Fellowship Diploma of the Association of Dispensing Opticians (FADO)
1.7%	Honours Fellowship Diploma of the Association of Dispensing Opticians (FADO Hons)
2.8%	Dispensing Certificate of the British Optical Association (BOA Disp)
5.0%	Diploma in Dispensing Optics of the Worshipful Company of Spectacle Makers SMC (Disp)
5.0%	Foundation Fellowship of the Faculty of Dispensing Opticians (FFDO)
3.3%	Membership of the Faculty of Dispensing Opticians (MFDO)
0.5%	Higher Qualification in Optometry (Professional Certificate, Higher Certificate, Professional Diploma)
0%	Master's degree in health subject (other than dispensing optics)
0.7%	Master's degree in business subject
1.0%	Master's degree in subject other than dispensing optics, health, or business
1.4%	NVQ
0.2%	Orthoptics qualification
0.2%	PhD in other health-related discipline
15.1%	Other

Total number of qualifications: 0 – 8. Mean = 1.67; SD 0.966.
Median = 1. Mode = 1.
54.3% had 1 qualification. 31.4% had 2 qualifications.

Q6 Are you currently studying for any qualifications?

6.4%	Yes
93.6%	No

If YES, please specify
Various. Main responses: Contact lens; low vision.

Q7 Since the year of your first GOC registration as a fully qualified optometrist, have you taken a career break of 6 months or more, after which you returned to dispensing optics? This may have been for reasons of parental/family leave, to pursue postgraduate or further education, to travel, for sabbatical, or for medical/personal reasons. If NO, please go to Q11.

22.6%	Yes
77.4%	No

Q8 If YES to Q7, how long was the break for, and what was the reason?

Main reasons: maternity or parental leave or to bring up children; medical reasons.

Q9 If YES to Q7, did you come off the GOC register during this career break?

28.7%	Yes
71.3%	No

Q10 If YES to Q9, which of the following would best describe your experience of returning to registration?

NB: percentages based on 10 relevant responses.

37.8%	Very simple, no problems at all
32.4%	Not too difficult
5.4%	Time-consuming and frustrating
24.3%	Found it difficult

SECTION 2: Training and Professional Development

Q11 In the past year, what is the number of professional conferences or training events you have attended?

Ranged between 0 and 25. 64.7% attended between 1 and 3. Mean = 2.89; SD 2.589. Median = 2. Mode = 2.

Q12 Have you ever undertaken any overseas work, volunteer activity, training or fellowships?

10.8%	Yes
89.2%	No

If YES, please specify:

Examples given of voluntary work all over the world.

Q13 Have you used any of the following sources of Continuing Education and Training (CET) and Continuing Professional Development (CPD)? Please select all that apply.

70.7%	ABDO member events
44.9%	CET conference arranged by employer
65.0%	CET/training arranged by manufacturer
94.9%	Reading articles in Dispensing Optics
84.1%	Reading articles in Optometry Today and Optician
16.8%	Reading employer journal/magazine
21.0%	Local Optical Committee (LOC) events
33.0%	Peer review organised by employer
4.0%	Regional Optical Committee (ROC) events
0.4%	None of the above
8.3%	Other

Q14 Do you have a special interest in a particular area of dispensing optics?

47.4%	Yes
52.6%	No

Nearly half identified contact lenses as an area of special interest.

Q15 If you answered YES to Q14, do you wish to undertake further training related to your area of special interest?

69%	Yes
31%	No

Q16 If you do not currently have a special interest in a particular area of dispensing optics, would you be interested in further training to enable you to develop a special interest?

58.6%	Yes
41.4%	No

Q17 If you do not currently have an area of particular interest, or are not interested in developing one, please specify which of the reasons below has had the greatest influence on this.

12.5%	Family circumstances
10.8%	Financial constraints
6.7%	Work commitments
58.3%	I am happy with my current scope/level of practice
10.8%	Other

Q18 Have you had an appraisal of your clinical skills in the last 12 months?

50.6%	Yes
49.4%	No

Q19 Do you feel that your clinical skills are continuously being developed?

89.5%	Yes
10.05%	No

If NO, please explain the reason(s) why

Main reasons: employer; motivation; financial.

Q20 Do you participate in the supervision of other staff in training?

59.7%	Yes
40.3%	No

If YES, how many have you supervised in the last 12 months

Usually between 1 and 3.

Q21 Do you access the internet at work through a device provided by your primary employer?

79.4%	Yes
20.6%	No

Q22 Do you access the internet at work through your own personal mobile device?

67.2%	Yes
32.8%	No

Q23 If you use the internet at work, what do you use it for? Please select all that apply.

52.2%	Access clinical guidance
48.7%	Communication with colleagues
32.4%	New clinical developments
61.2%	Optical news and information
56.7%	Professional development
16.8%	Other

Q24 Do you consider any of the following to be important for your professional development? Please select all that apply.

45.8%	Links with Local or Regional Optical Committees
57.9%	Peer support schemes/mentoring
31.9%	Links with local academic/training institutions
36.9%	Links with community low vision support services
69.8%	Links with other optical professionals through participation in multidisciplinary CET
41.4%	Links with health professionals (outside of optical workforce) across primary care

SECTION 3: Workplace and Clinical Profile

Q25 What is your employment status? Please select all that apply.

55.0%	Employed Full-time
19.9%	Employed Part-time
16.8%	Self-Employed Full-time
8.8%	Self-Employed Part-time
0.7%	Retired
0.7%	Unemployed
2.9%	Other

Q26 What is the postcode of your primary workplace or clinical practice? Please provide only the first half of your postcode. For example, if your postcode is WC2N 5NG, please enter WC2N. If you are self-employed or a locum, please use residential postcode.

Individual responses

Q27 Please categorise the location of your primary workplace or clinical practice.

30.1%	City
59.4%	Town
7.6%	Rural
2.9%	Other

Q28 What do you consider to be your primary clinical or non-clinical role? Please select one.

14.3%	Practice owner: 1 practice (not affiliated with a regional/national optometric/optical company)
3.5%	Practice owner: small group (2-4 practice sites, not affiliated with a regional/national optometric/optical company)
1.3%	Practice owner: medium group (5 or more practice sites, not affiliated with a regional/national optometric/optical company)
0.9%	Franchisee: 1 practice affiliated with a regional optometric/optical company
2.2%	Franchisee: 1 practice affiliated with a national optometric/optical company
0.4%	Franchisee: multiple practices affiliated with a regional optometric/optical company
1.3%	Franchisee: multiple practices affiliated with a national optometric/optical company
4.4%	Locum: multiple practice
4.9%	Locum: independent practice
17.4%	Employed: by an optometry/optical practice (not affiliated with a regional/national optometric/optical company)
9.1%	Employed: by a small group optometry/optical practice (2-4 practice sites, not affiliated with a regional/national optometric/optical company)
4.9%	Employed: by a medium group (5 or more practice sites, not affiliated with a regional/national optometric/optical company)
1.3%	Employed: by an optometric practice affiliated with a regional optometric/optical company
7.1%	Employed: by an optometric practice affiliated with a national optometric/optical company
0.9%	Employed by a hospital/clinic/other multidisciplinary
0%	Employed by a community health centre
1.3%	Employed by a regional optometric/optical company
17.9%	Employed by a national optometric/optical company
0.9%	Employed by optical/ophthalmic manufacturer or wholesaler
0.2%	Employed in a domiciliary role
2.0%	Employed by an educational institution
0%	Employed by local/other/government
0.4%	Retired
0.7%	Unemployed
2.6%	Other

Q29 How many hours per week do you spend in your primary role?

Responses ranged between 1 and 90 hours.
Mean = 33.93 hours; SD 10.721.
Median = 37 hours. Mode = 40 hours.

Q30 If applicable, in your primary practice setting, how many minutes on average do you spend per patient, per sight test?

Responses ranged between 10 and 120 minutes.
Mean = 27.78 minutes; SD 9.996 minutes.
Median = 25 minutes. Mode = 30 minutes.

Q31 In addition to your primary clinical or non-clinical role, do you have any other roles? Please select all that apply.

4.6%	Practice owner: 1 practice (not affiliated with a regional/national optometric/optical
1.3%	Practice owner: small group (2-4 practice sites, not affiliated with a regional/national optometric/optical company)
1.1%	Practice owner: medium group (5 or more practice sites, not affiliated with a regional/national optometric/optical company)
0.2%	Franchisee: 1 practice affiliated with a regional optometric/optical company
1.8%	Franchisee: 1 practice affiliated with a national optometric/optical company
0.4%	Franchisee: multiple practices affiliated with a regional optometric/optical company
0%	Franchisee: multiple practices affiliated with a national optometric/optical company
3.3%	Locum: multiple practice
5.1%	Locum: independent practice
2.9%	Employed: by an optometry/optical practice (not affiliated with a regional/national optometric/optical company)
0.2%	Employed: by a small group optometry/optical practice (2-4 practice sites, not affiliated with a regional/national optometric/optical company)
1.1%	Employed: by a medium group (5 or more practice sites, not affiliated with a regional/national optometric/optical company)
0%	Employed: by an optometric practice affiliated with a regional optometric/optical company
0.4%	Employed: by an optometric practice affiliated with a national optometric/optical company
1.3%	Employed by a hospital/clinic/other multidisciplinary
0%	Employed by a community health centre
0.7%	Employed by a regional optometric/optical company
1.3%	Employed by a national optometric/optical company
1.1%	Employed by optical/ophthalmic manufacturer or wholesaler
0%	Employed in a domiciliary role
3.3%	Employed by an educational institution
0.4%	Employed by local/other/government
10.6%	Other
65.3%	No other roles

163 had an additional role. 150 (92%) had one additional role.

Q32 If applicable, how many hours per week do you spend in your other role(s)/practice settings?

Ranged between 0 and 40 hours.

Q33 If applicable, in your other role/practice setting, how many minutes do you spend per patient, per sight test?

Ranged between 10 and 90 minutes.

Q34 Across all roles and practice settings, how many hours per week do you spend on the following activities? Please enter the number of hours spent on each activity. If not applicable, please enter 0.

ACTIVITY	HOURS PER WEEK
Patient contact time as an optometrist	0 – 45
Patient-related paperwork	0 – 90
On call for after hours care	0 – 6
Practice administration	0 – 60
Business management activities	0 – 60
Staff training	0 – 25
Professional development	0 – 60
Other	0 – 60

Q35 We are interested to understand what you and your colleagues do across the practice settings where you work regularly. If applicable, for each type of professional, please select all activities that apply.

	Admin or reception staff	Contact Lens Opticians (CLO)	Dispensing Opticians, excluding CLO	Optical Assistants	Ophthalmic Medical Practitioner	Ophthalmologist	Optometrist	Orthoptist
Taking patient details	71.4%	23.9%	70.2%	50.7%	1.4%	0.5%	30.0%	0%
Visual fields tests	24.6%	8.2%	48.1%	42.5%	0.9%	1.4%	54.0%	0.7%
Non-contact IOPs	11.0%	5.2%	24.6%	26.5%	1.6%	1.9$	63.4%	0.5%
Retinal photography	16.7%	7.3%	32.4%	31.5%	0.5%	1.4%	52.3%	0.2%
OCT	4.5%	2.1%	8.9%	7.3%	0.7%	0.7%	31.7%	0.2%
Optomap	1.6%	0.7%	2.6%	2.1%	0%	0.2%	13.4%	0.2%
Glazing	4.9%	2.8%	30.3%	17.6%	0%	0%	2.6%	0%
Teaching insertion and removal of contact lenses (CL)	17.1%	36.4%	42.0%	43.7%	0.2%	0.5%	39.4%	0.2%
Fitting CL	0%	44.8%	0.9%	0%	1.2%	1.4%	67.8%	0.7%
Supplying CL to patients under 16	1.9%	44.8%	14.6%	2.3%	1.2%	1.4%	64.8%	0.5%
Supplying CL to patients age 16 and over	10.6%	44.6%	22.1%	14.3%	1.2%	1.4%	63.4%	0.5%
Dispensing spectacles to patients under 16	1.4%	22.5%	90.8%	9.9%	0.5%	1.2%	36.9%	0.2%
Dispensing spectacles to patients age 16 and over	13.6%	22.1%	89.2%	47.9%	0.5%	0.7%	30.0%	0%
Working with patients with low vision	0.7%	12.2%	62.7%	4.7%	1.2%	1.4%	50.0%	0.5%
Working with patients with minor eye conditions	2.3%	24.2%	38.3%	6.6%	1.6%	2.3%	70.4%	0.7%
Colorimetry/tints for dyslexia	0.2%	3.3%	18.5%	1.6%	0.7%	0.7%	35.2%	1.2%
Smoking cessation	1.6%	3.1%	6.3%	1.9%	0.5%	0.5%	15.0%	0.2%

Q36 What is your total annual income from work related to optometry (GBP gross income before tax, for the tax year ending April 2014)? Please enter figure to the nearest £1,000.

Mean = £44,728 but SD = £118,635. Mode = £30,000 Median = £26,000.
Removing top and bottom per cent (outliers): Mean = £34,606; SD = £57063. Mode = £30,000. Median = £26,000

SECTION 4: Job Satisfaction

Q37 Please rate your satisfaction with individual job factors on a 7-point scale ranging from 1 (Extremely dissatisfied) to 7 (Extremely satisfied).

	1	2	3	4	5	6	7
Physical working conditions	2.1%	2.3%	6.3%	12.0%	20.4%	29.2%	27.8%
Level of autonomy/independence in your job	3.5%	2.1%	5.1%	8.1%	17.0%	29.3%	34.9%
Colleagues and fellow workers	2.3%	1.6%	3.3%	9.8%	20.2%	34.9%	27.9%
Recognition you receive for good work	5.3%	9.3%	8.8%	12.7%	21.3%	22.5%	20.1%
Amount of responsibility you are given	3.7%	2.1%	6.5%	5.6%	16.5%	30.2%	35.3%
Remuneration	6.8%	6.1%	8.7%	14.8%	24.9%	24.2%	14.6%
Opportunity to use your abilities	2.6%	2.6%	5.8%	10.4%	16.9%	32.5%	29.2%
Hours of work	1.9%	4.2%	4.4%	12.1%	21.8%	31.3%	24.4%
Amount of variety in your job	2.3%	3.0%	5.6%	13.0%	17.7%	27.7%	30.7%
Overall job satisfaction	3.3%	2.1%	3.5%	12.1%	20.5%	31.4%	27.2%

Q38 What most attracted you to your current position? Please select one only.

9.3%	Financial reasons (high wages, great benefits, etc.)
19.6%	Family circumstances (proximity to relatives, schools, etc.)
23.5%	Career advancement (opportunity for own practice, extended role, etc.)
25.2%	Opportunity to develop professionally (new patient groups, different practice setting, opportunity to learn new skills)
8.2%	It was the only role I could find
14.2%	Other

Q39 What are your career preferences within the next 5 years? Please select all that apply.

35.6%	Flexible working
1.9%	Career break
15.4%	Leadership role
5.0%	Move to a role at a practice (independent)
1.4%	Move to a role at a practice (franchise)
5.0%	Move to an academic role (research or teaching)
4.3%	Move to a hospital role
3.6%	Move to a locum role
1.4%	Move to a domiciliary role
29.0%	Professional development or training in area of special interest
13.1%	Formal qualification or higher degree in area of special interest
6.7%	Establish a practice (independent)
2.9%	Establish a practice (franchise)
2.6%	Engagement in research
2.9%	Overseas work
2.7%	Leave healthcare work entirely
22.8%	Retirement plans
8.6%	Other

Q40 If your career preferences in the next 5 years include to 'leave dispensing optics' please explain why.

Individual responses

Q41 In the next 5 years do your career preferences include working more than 30 hours per week?

49.8%	Yes
42.1%	No
8.2%	Not applicable

Q42 Which of these job satisfaction factors are important to you? Please select all that apply.

64.6%	Physical working conditions
69.2%	Level of autonomy/independence in your job
78.2%	Colleagues and fellow workers
64.8%	Recognition you receive for good work
53.7%	Amount of responsibility you are given
74.5%	Remuneration
72.0%	Opportunity to use your abilities
64.1%	Hours of work
61.8%	Amount of variety in your job
86.6%	Overall job satisfaction
2.0%	Other

Q43 Please choose the job satisfaction factor that is most important to you. Please select one only.

2.6%	Physical working conditions
10.9%	Level of autonomy/independence in your job
7.9%	Colleagues and fellow workers
6.7%	Recognition you receive for good work
0.9%	Amount of responsibility you are given
11.4%	Remuneration
13.5%	Opportunity to use your abilities
7.0%	Hours of work
6.3%	Amount of variety in your job
32.7%	Overall job satisfaction
1.6%	Other (please specify):

Q44 At which age do you plan to retire?

Between 50 and 100. 70% said by the age of 65.

SECTION 5: Comments/Recommendations

Q45 Based on your experience and observations, please give your opinion on the current dispensing optics workforce in your local area in terms of its adequacy for current demands and likely capacity to meet future requirements. Please select all that apply.

34.1%	Adequate for current and future demands
18.2%	Current shortage of workforce
4.8%	Current oversupply of workforce
7.9%	Shortage of workforce in the next 5 years
5.8%	Oversupply of workforce in the next 5 years
26.6%	Don't know
2.6%	Other

Q46 Which of the factors below will influence your work in the next 5 years? Please select all that apply.

29.8%	Advances in treatment for eye disease
53.8%	Ageing population
33.8%	Changing public health priorities
26.0%	Contractual arrangements/funding
19.8%	Local policies
37.6%	My individual working environment
71.0%	My personal circumstances
21.9%	National policies
42.1%	New technologies
2.4%	Other

Q47 In your opinion, which of these factors will be the biggest influence on your work in the next 5 years? Please select only one.

4.6%	Advances in treatment for eye disease
14.5%	Ageing population
6.3%	Changing public health priorities
8.7%	Contractual arrangements/funding
1.0%	Local policies
8.5%	My individual working environment
41.5%	My personal circumstances
3.6%	National policies
9.4%	New technologies
1.9%	Other

Q48 We would like to give you the opportunity to provide any additional comments on the optical workforce.

Individual responses

SECTION 6: Personal Profile

Q49 Age (in full years)

Ranged between 21 and 72 years.
Mean = 47.54 years; SD 10.73.

Q50 Gender

45.6%	Male
52.8%	Female
0.2%	Transgender
1.4%	I prefer not to answer

Q51 Ethnicity

88.1%	English/Welsh/Scottish/Northern Irish
1.7%	Irish
1.1%	Any other white background (please specify below)
3.6%	Asian or Asian British: Indian
0.2%	Asian or Asian British: Pakistani
0%	Asian or Asian British: Bangladeshi
0%	Asian or Asian British: Chinese
0.2%	Any other Asian background
0.5%	Black or Black British: African
0%	Black or Black British: Caribbean
0.2%	Any other Black/African/Caribbean background
0.2%	Mixed ethnic groups
2.2%	Any other ethnic background
3.8%	I do not wish to declare my ethnic background

SECTION 7: Geography

Q52 Citizenship (please include dual citizenship if applicable)

98.4%	British (including dual citizenship)
0.6%	Irish
0.6%	EU
0.4%	Other

Q53 Country of birth

76.9%	England
8.9%	Scotland
4.1%	Wales
1.7%	Northern Ireland
8.4%	Other (please specify):

Q54 Country of residence

86.0%	England
7.5%	Scotland
4.6%	Wales
1%	Northern Ireland
1%	Other

Q55 What is your residential postcode? Please provide only the first half of your postcode. For example, if your postcode is WC2N 5NG, please enter WC2N.

Individual responses

Q56 Please categorise the place where you live.

21.4%	City
48.2%	Town
29.6%	Rural
0.7%	Other

Q57 How far is your residence from your current primary workplace? Please provide your answer in miles.

Range: 0 – 147.5 miles. Mean = 13.3 miles; SD = 16.25 miles. Median = 10 miles. Mode = 10 Miles

Q58 How many miles do you travel per week for work?

0 – 1,200

Q59 How far is your current primary clinical workplace from the place you grew up?

9.6%	Another country
42.9%	Another county within the same country
42.4%	The same county/city
5.1%	Other

Q60 If you have ever moved to another country or county within the same country, what was the main reason for that?

44.9%	Job opportunity
4.8%	Further education
5.3%	Opportunity to establish own practice
36.7%	Family circumstances
8.2%	Other

SECTION 8: Family

Q61 What is your marital status?

11.1%	Single
0.9%	Widowed
8.2%	Separated or Divorced
75.7%	Married or civil partnership
3.4%	I prefer not to answer

Q62 If applicable, what is your partner's employment status?

-	Full-time
-	Part-time
-	Casual
-	Retired
-	Not employed
-	Not applicable
-	I prefer not to answer
-	Other

Data not reported because of respondent errors in interpretation.

Q63 Do you have any dependent children? Dependent children are persons aged under 16 or single persons aged 16 to 18 and in full-time education.

36.2%	Yes
63.8%	No

Q63 If you have dependent children, please specify the number of children in each age bracket.

No. of children age 0-5	0 = 85.2%;1 child 10.2%; 2 children 3.8% 3 or more children 0.8%
No. of children age 6-11	0 = 85.4%; 1 child 10.2%; 2 children 3.5%; 3 or more children 0.8%
No. of children age 12-15	0= 90.1% 1 child 7.7%; 2 children 2%; 3 or more children 0.2%

Q65 Have any members of your family worked in eye care or in an eye care related business, charity, or special education organisation?

34%	Yes
66%	No

SECTION 9: Health

Q66 Do you have any disabilities?

The Equality Act (2010) states that a person has a disability if – (a) the person has a physical or mental impairment, and (b) the impairment has a substantial and long-term adverse effect on the person's ability to carry out normal day-to-day activities. 'Long term' usually means the impairment should have lasted or be expected to last at least one year.

2.7%	Yes
95.6%	No
1.7%	I prefer not to answer

Q67 If you have a disability, do you require personal care or support at work as a result of your disability?

27.3%	Yes
72.7%	No

NB: Regarding the 27.3%: only 11 dispensing opticians said they had a disability and the 27.3% refers to 3 of them.

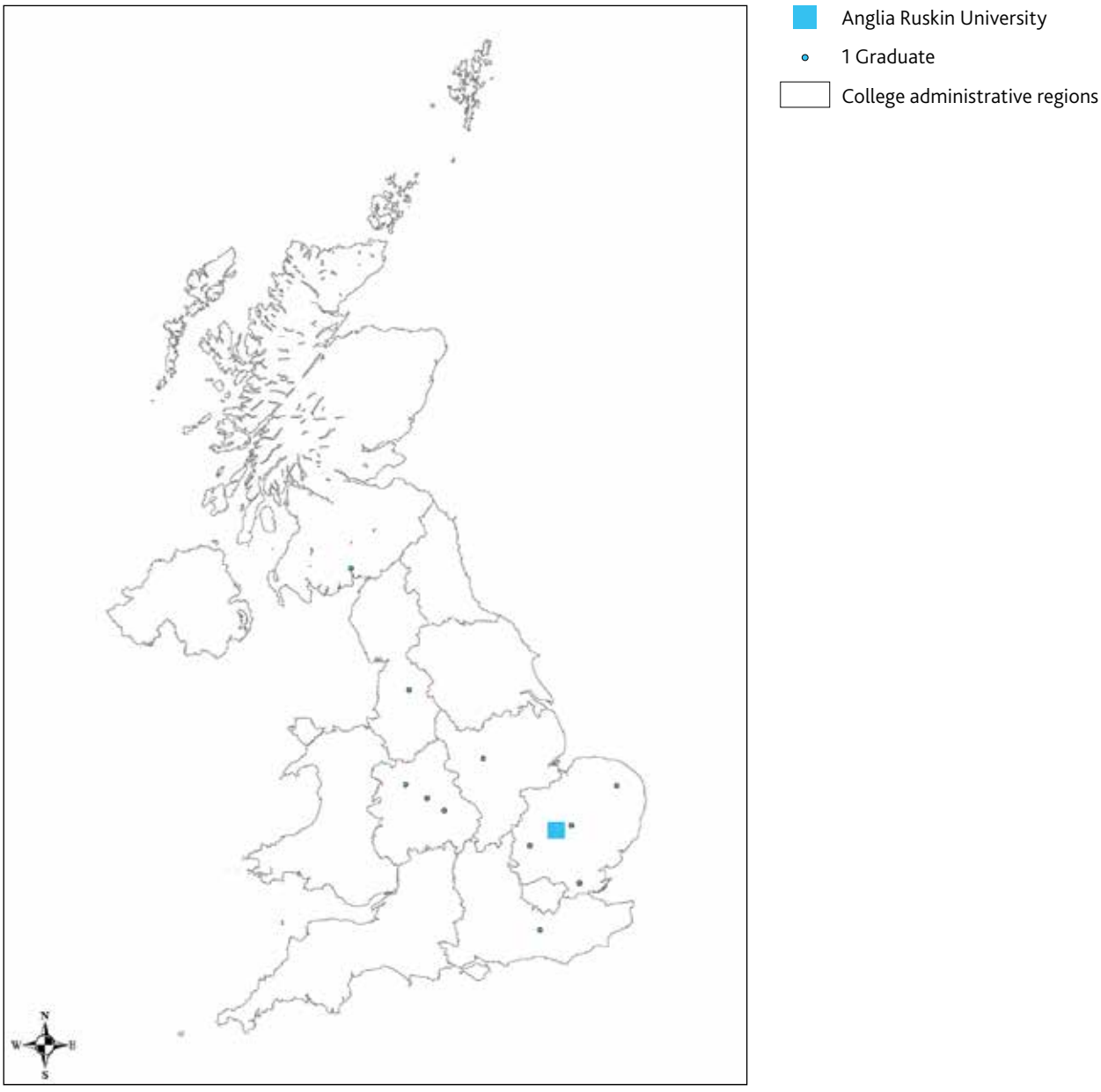
Q68 How would you assess your health as compared with other people of your age?

2.4%	Poor
15.2%	Medium
57.5%	Good
24.9%	Excellent

Appendix 3

Maps of UK optometry schools and graduate destinations

Map A1: Anglia Ruskin University optometry graduate destinations (by number of graduates)

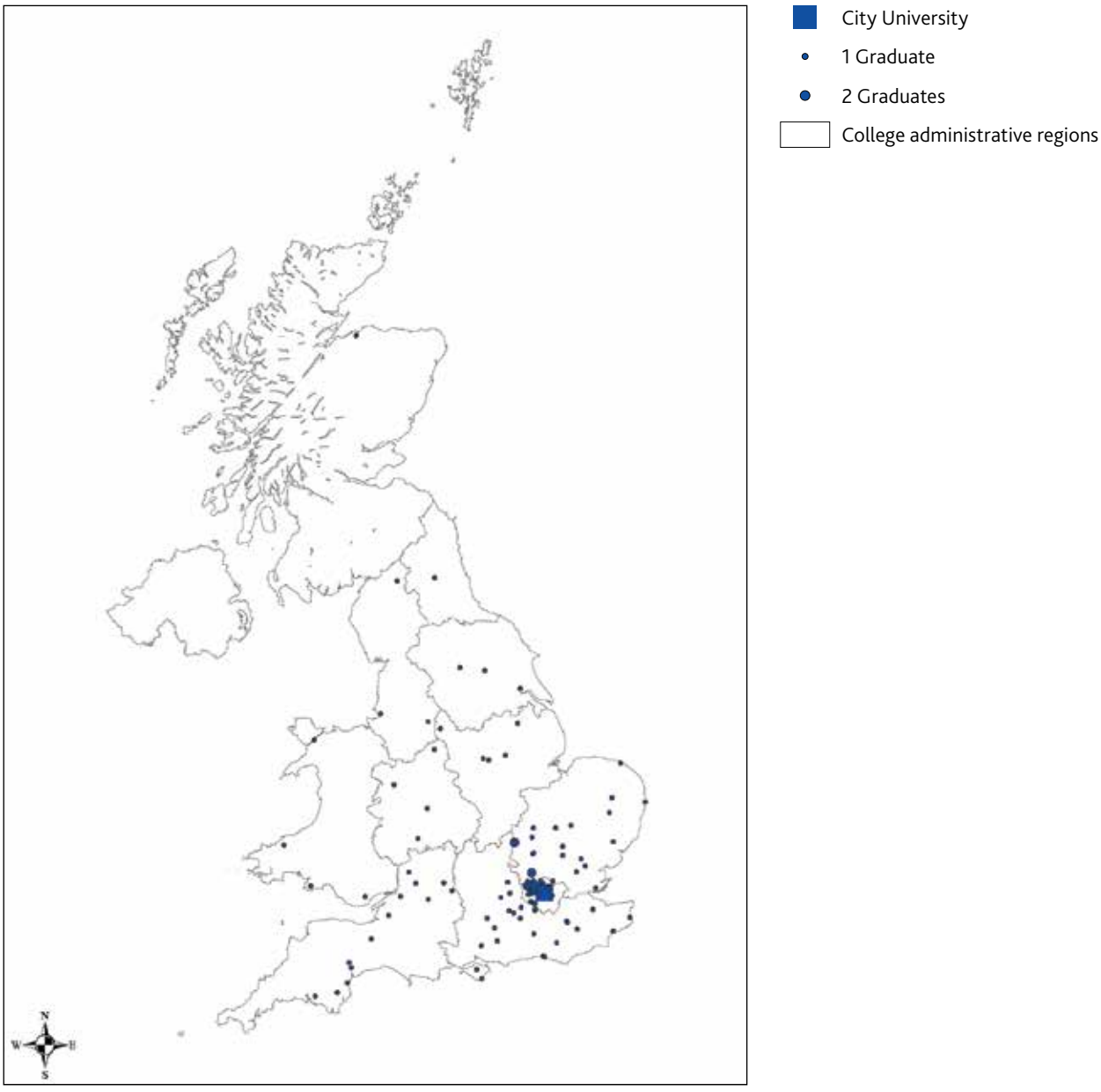


Map A2: Aston University optometry graduate destinations (by number of graduates)

Map A3: University of Bradford optometry graduate destinations (by number of graduates)

Map A4: Cardiff University optometry graduate destinations (by number of graduates)

Map A5: City University London optometry graduate destinations (by number of graduates)



Map A6: Glasgow Caledonian University optometry graduate destinations (by number of graduates)

Map A7: University of Manchester optometry graduate destinations (by number of graduates)

Map A8: Ulster University optometry graduate destinations (by number of graduates)

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