

June 2005/23

Issues paper

This report is for information

The purpose of this document is to extend the findings of the 2002 report 'Academic staff: trends and projections' in support of HEFCE's higher education workforce development strategy.

Staff employed at HEFCE funded HEIs

Trends, profiles and projections

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Staff employed at HEFCE funded HEIs

Trends, profiles and projections

To	Heads of HEFCE funded higher education institutions
Of interest to those responsible for	Staff data, Planning, Human resources management
Reference	2005/23
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Executive summary

Purpose

1. This document extends the findings of the 2002 report 'Academic staff: trends and projections' (HEFCE 2002/43) in support of HEFCE's higher education workforce development strategy.

Key points

2. In this report we give an overview of trends in academic staff at English higher education institutions (HEIs) from 1995-96 to 2003-04. It shows that for the permanent academic staff:
- a. The number has steadily increased since 1997-98.
 - b. The proportion who are part-time increased from 5 per cent in 1995-96 to 10 per cent in 2003-04.
 - c. Although for the whole sector numbers have increased, there has been a decline in the numbers of chemistry, physics, engineering and mathematics staff over the period.
 - d. There has been a rise in the proportion in the higher grades during the period.
 - e. The proportion aged 50 or over remained the same from 1995-96 to 2003-04, although the proportion aged 55 or over increased.
 - f. the proportions of women, non-UK nationals, and staff from minority ethnic backgrounds have all risen steadily.
3. We have also revisited the modelling completed in the previous report and provided academic staffing projections using 2003-04 as our base year. These projections show that (under particular assumptions):
- a. Just over 6,000 recruits to permanent academic positions will be required each year from 2004-05 to 2010-11 to maintain 2003-04 levels.
 - b. Between 7,000 and 12,000 recruits may be required to keep in line with DfES target student numbers for the period 2004-05 and 2010-11.

4. For the first time, we explored the attributes of professional and support staff:
 - a. The most frequent primary function for professional and support staff is as a support administrator.
 - b. The majority of professional and support staff are full-time (63 per cent).
 - c. There are varying age profiles depending on the primary function of the professional and support staff.
 - d. The most female-dominated function of professional and support staff is support administrator, where 83 per cent of staff are female.
 - e. 92 per cent of professional and support staff are from a white ethnic background.
 - f. Over 20,000 extra professional and support staff are projected to be needed in 2010-11 compared to 2003-04 levels.
5. Trends in PhD starters and qualifiers are also examined. They show that:
 - a. The number of home-domiciled PhD starters remained steady between 1997-98 and 2001-02 at around 12,000 students per annum.
 - b. The number of home-domiciled qualifiers rose by around a third between 1995-96 and 2003-04.
 - c. The proportion of PhD starters who are home-domiciled decreased between 1997-98 (65 per cent) and 2001-02 (60 per cent).
 - d. The proportion of PhD starters with a first class degree in one of the two years prior to PhD entry has increased in line with an overall increase in the number of qualifiers with first class degrees.
6. This report also examines the contract status of research assistants and finds that around 3 per cent moved from a temporary to permanent contract between 2002-03 and 2003-04.

Action required

7. This report is for information.

Introduction

8. The purpose of this document is to extend the findings of the 2002 report 'Academic staff: trends and projections' (HEFCE 2002/43) and to help support HEFCE's higher education workforce development strategy. We aim to provide an overview of trends in academic and professional and support staff at English higher education institutions (HEIs), and in PhD starters and qualifiers.

9. In addition, we revisit the modelling completed in the 2002 report and update the results using 2003-04 as our base year.

Data source

10. Data are drawn from the Higher Education Statistics Agency (HESA) individualised staff records for 1994-95 to 2002-03, the HESA new individualised staff record for 2003-04, and the HESA individualised student record for 1994-95 to 2003-04.

11. The HESA new individualised staff record, introduced in 2003-04, extends to professional and support staff as well as academic staff, and includes, for the first time, contracts with a full-time equivalence (FTE) of less than 25 per cent. The transition from the old record to the new makes it difficult to establish a completely consistent time series. The main problems are as follows:

- a. Although every effort has been made to extract a comparable population with regard to FTE, the time series of academic staff may be affected by the extension of the data collection to a wider population of staff. Therefore, any notable changes between 2002-03 and 2003-04 should be treated with caution.
- b. In the new record, there are larger numbers of unknown or default entries in several fields, due to changes in data validation rules. This especially affects salary and subject area.

12. In 2002-03 a new method of coding subject areas, using the Joint Academic Coding System (JACS), was introduced to replace the HESA code system. While we have sought to map the subject groups equivalently, this may affect the continuity of the time series.

Terminology

13. Throughout this document we make reference to, and perform analysis on, several different populations, as described in the table below. For clarity we have designated to each one a code as well as a name. Detailed descriptions of population criteria are at Annex A.

14. For the projections part of this document, we use a modified version of Pop D, which we will define as Pop D*. As described in HEFCE 2002/43 paragraph 58, this population is permanent academic staff based on counting staff once across the whole academic year rather than a census data approach used for Pop D. In addition it is a count for staff in all UK HEIs rather than restricted to English HEI only.

Population	Description	Code
All staff in English HEIs	All staff who are actively employed in an English HEI on the census date of 1 December.	Pop A
Staff with academic roles	All staff in Pop A who are actively employed in an English HEI on the census date of 1 December, have an academic contract at some point during the academic year.	Pop B
Academic and assistant academic staff	All staff in Pop B who have at least one active academic contract of at least 25 per cent on the census date and a total FTE of 40 per cent or more. This also excludes medicine and dentistry staff. The purpose of these restrictions is to ensure consistency across the time series.	Pop C
Permanent academic staff	All staff in Pop C who have permanent contracts and are on lecturer grades or above.	Pop D
Research assistants	Staff in Pop B who are below lecturer grades and are involved in research but who were not eligible for submission to the 2001 RAE.	Pop E
Staff with professional/support roles	All staff in Pop A who have a professional/support contract at some point during the academic year	Pop F
Professional and support staff	All staff in Pop F who have a total FTE of at least 40 per cent.	Pop G
PhD starters	All students who commenced on a PhD at any point during the academic year in an English HEI	Pop H
PhD qualifiers	All students who qualify with a PhD during the academic year in an English HEI	Pop I

Overview

15. Table 1 shows that, of all the staff in the UK higher education sector, 82 per cent are employed in English HEIs. The main body of this report discusses trends, breakdowns and projections for these staff only. Equivalent data for the whole of the UK is at Annex E apart from certain sections which are highlighted.

Table 1 Numbers and total FTE of staff in English HEIs compared with the rest of the UK, 2003-04

	Number	% Total number	FTE	% FTE
English HEIs (Pop A)	275,124	82%	214,365	81%
Scottish, Welsh and Northern Irish HEIs	59,079	18%	48,844	19%
All UK HEIs	334,203	100%	263,208	100%

Note: The FTE figures are obtained by summing all contracts over all staff included in this table.

16. Table 2 shows that 83 per cent of all UK academic staff are employed within English HEIs.

Table 2 Numbers and total FTE of academic staff in English HEIs compared with the rest of the UK, 2003-04

	Number	% Total number	FTE	% FTE
English HEIs	124,627	83%	95,061	82%
Scottish, Welsh and Northern Irish HEIs	25,642	17%	21,324	18%
All UK HEIs	150,269	100%	116,384	100%

Note: The FTE figures are obtained by summing academic contracts over all staff included in this table.

17. The English higher education (HE) sector employs around 275,000 staff (215,000 FTE) in a variety of roles. In this report, we look separately at staff with academic roles and staff with professional and support roles (see Table 3). Notice that around 3,000 staff members fall into both categories.

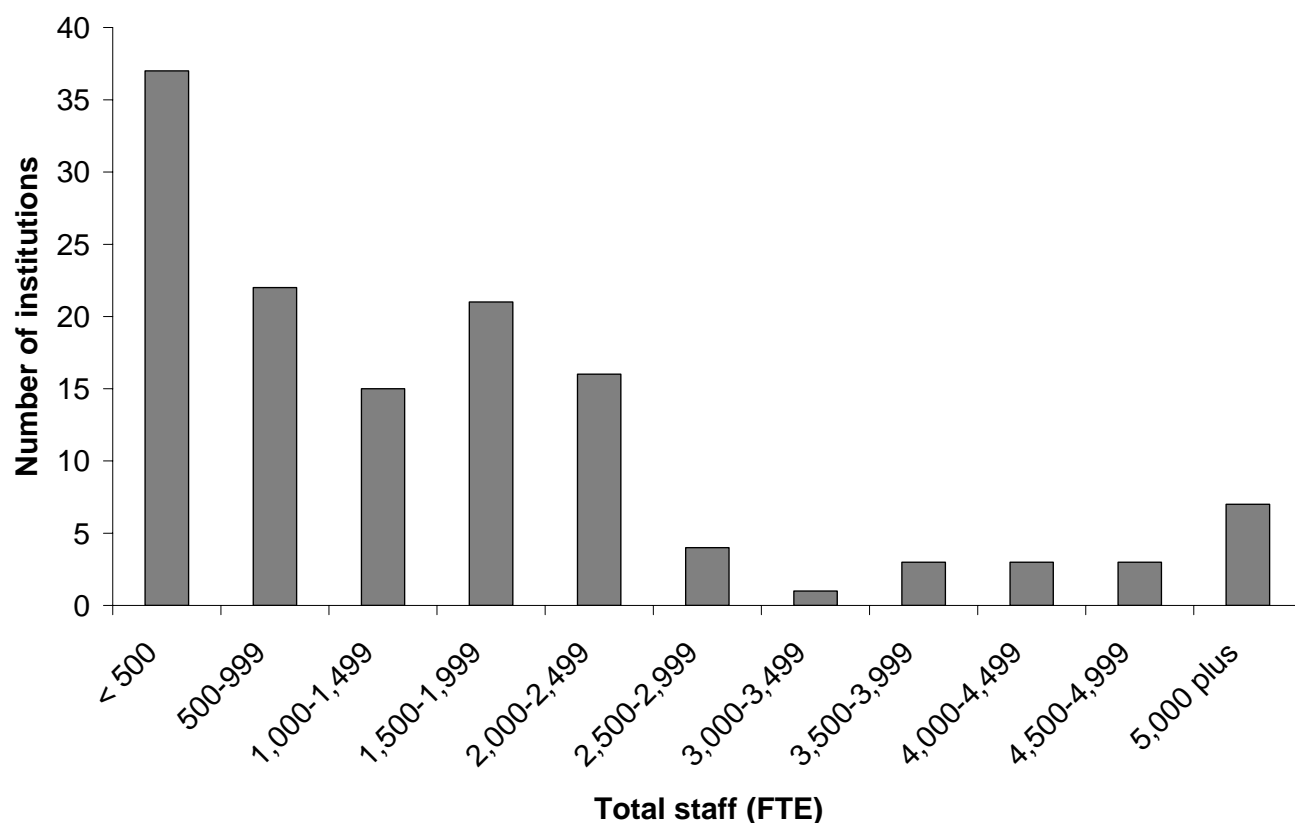
Table 3 Staff in English HEIs, 2003-04

Role	Headcount		FTE	
	Number	%	Sum of FTE	%
Academic role only	121,723	44%	93,908	44%
Professional/support and academic roles	2,904	1%	2,215	1%
Professional/support role only	150,497	55%	118,242	55%
Total with academic roles (Pop B)	124,627	N/A	95,061	44%
Total with professional/support roles (Pop F)	153,401	N/A	119,304	56%
Total	275,124	100%	214,365	100%

Note: The 'Total with academic roles' and 'Total with professional/support roles' headcounts overlap by the headcount of staff with professional/support and academic roles. The FTE figures are obtained by summing academic contracts and summing professional/support contracts over all staff included in this table (hence we are able to apportion the FTE of staff with professional/support and academic roles to either category). Pop A

18. Figure 1 shows the varying sizes of total staff FTE in English HEIs. The majority of institutions have less than 2,500 but seven institutions have more than 5,000.

Figure 1 Institutions by total staff FTE, 2003-04



Notes: Pop A

19. Table 4 shows that the biggest institution is a 'research-orientated'¹ university and has a total staff FTE of over 7,000. The smallest is a general college or specialist HEI and has a staff FTE of only 25. The median FTE is 1,353.

Table 4 Numbers and total FTE of staff in English HEIs, 2003-04

Type of institution	Number	Number of staff			Total staff FTE		
		Median	Max	Min	Median	Max	Min
Research-orientated universities	39	3,081	10,883	863	2,283	7,388	720
Other universities	38	2,094	3,985	874	1,653	3,092	728
General colleges/specialist HEIs	55	494	3,346	30	354	1,711	25
Total	132	1,836	10,883	30	1,353	7,388	25

Note: The maximum and minimum numbers of staff do not necessarily relate to the same institutions as do the maximum and minimum FTEs. Pop A

20. Table 5 gives a detailed breakdown of all staff with academic roles, of which there are around 125,000. Notice that, while the number of very low activity staff is as high as 20,000, the equivalent FTE is under 3,000.

21. The black shaded area in Table 5 represents the population Pop C as defined in paragraph 13. We exclude contracts equating to less than 25 per cent FTE, because prior to 2003-04 they are not recorded on the HESA individualised staff record. Medicine and dentistry staff are also excluded from Pop C as some of them may be employed by the NHS rather than an HEI. As such they are not all covered by the HESA record, making it difficult to obtain a reliable time series.

22. When research assistants (Pop E) are considered in paragraphs 90 through to 100, we consider a subdivision of the population represented in the grey shaded area.

Table 5 All staff with academic roles, 2003-04

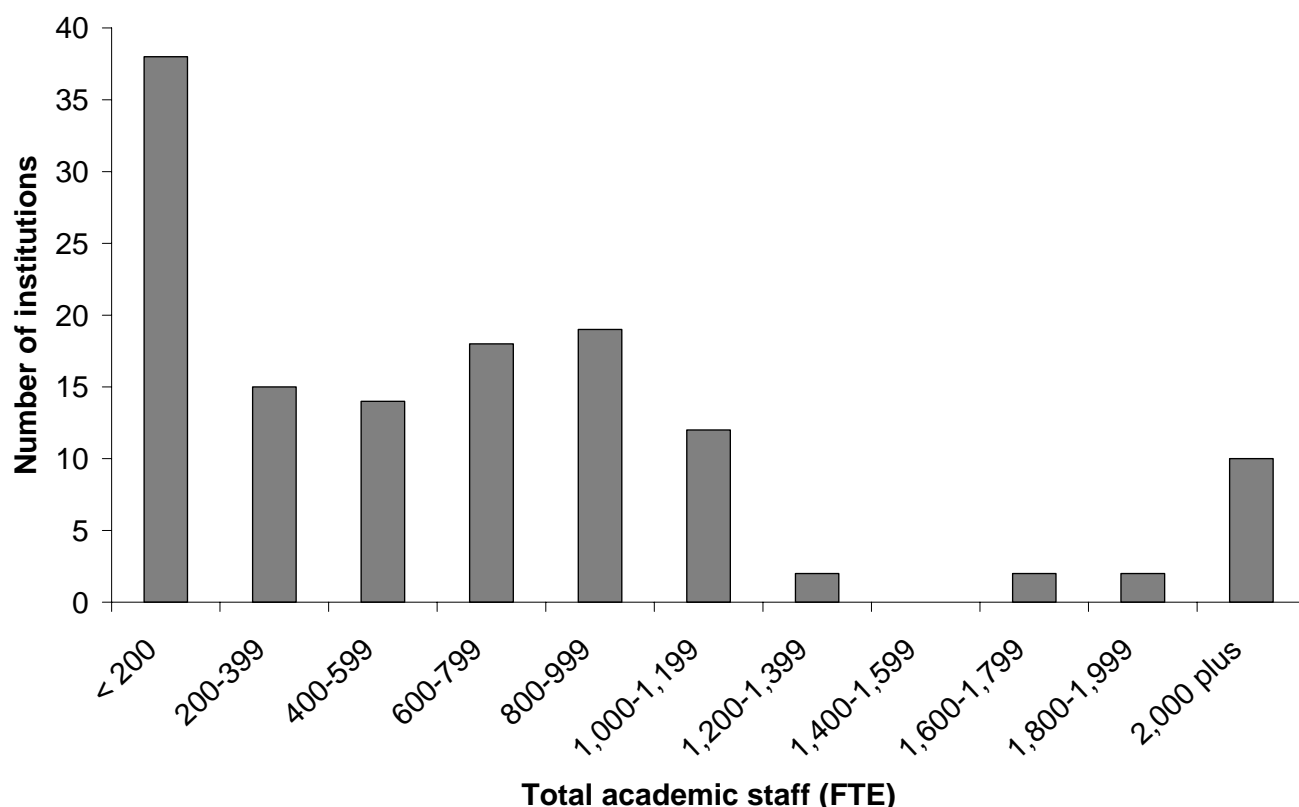
Staff type	All staff with an academic role		Excluding medicine and dentistry	
	Number	Academic FTE	Number	Academic FTE
Academics	70,520	65,767	67,595	63,080
Assistant academics	28,956	25,139	28,118	24,403
Low activity (staff with a total FTE less than 40%)	4,421	1,380	4,292	1,341
Very low activity and inactive contracts	20,730	2,774	20,308	2,695
Total	124,627	95,061	120,313	91,518

Note: Contracts equating to an FTE of less than 25 per cent have been excluded from all categories except for very low activity and inactive contracts. 'Inactive contracts' refers to staff with a professional/support contract active on 1 December 2003 and an academic contract at some point over the year 2003-04, but not active on 1 December 2003. The FTE figures are obtained by summing academic contracts over all staff included in this table. Pop B

¹ All universities were placed in order of the amount of research funding received (in 2002-03), and the top half of institutions are classified as 'research-orientated'.

23. Figure 2 shows the range of sizes of total academic staff FTE by institution. Most institutions have less than 1,200 total FTE academic staff, but there are around 10 with more than 2,000.

Figure 2 Institutions by total staff (FTE) with academic roles, 2003-04



Notes: Pop B

24. Table 6 shows that research universities have the largest academic FTE with a median of around 1,000 compared with an overall median of around 600; the largest has an academic FTE of 3,775. The smallest has an academic FTE of only 13, and is a general college or a specialist HEI.

Table 6 Numbers and academic FTE of staff with academic roles in English HEIs, 2003-04

Type of institution	Number	Number of staff			Academic FTE		
		Median	Max	Min	Median	Max	Min
Research orientated universities	39	1,423	4,690	375	1,032	3,775	313
Other universities	38	973	1,888	95	738	1,337	85
General colleges/specialist HEIs	55	211	2,135	16	106	718	13
Total	132	788	4,690	16	596	3,775	13

Note: The maximum and minimum numbers of staff do not necessarily relate to the same institutions as do the maximum and minimum FTEs. Pop B

Academic and assistant academic staff

Overall

25. In this section we extend the findings of the first section of the HEFCE 2002/43 report titled 'Academic staff: trends and projections'. Table 2 shows that 83 per cent of all staff with academic roles in the UK HE sector are employed within English HEIs, and this is the group of staff we consider in this section.

26. For further information on the results for all UK HEIs see Annex E. This provides tables and figures equivalent to those in the previous report², which covered all UK HEIs.

27. In 2003-04, the HESA staff record was extended to include, alongside other additions, academic staff on individual contracts of less than 25 per cent FTE. Information on such staff was not available in earlier years, and in order to look at trends in staff over time we excluded them from our further analysis. We also removed medicine and dentistry staff, to be consistent with HEFCE 2002/43.

28. For the purposes of the following tables and figures, we refer to professors, senior lecturers, senior researchers, and lecturers as 'academic staff', and to those on lower grades as 'assistant academic staff'. As with HEFCE 2002/43, this section focuses on 'academic staff' with a total FTE of at least 40 per cent, although we first look at a wider population which includes assistant academics. Definitions used and description of the population are at Annex A.

29. Table 7 shows the numbers and FTE of all academic and assistant academic staff. The bulk of the staff comprises lecturers and above on permanent contracts. The permanent assistant academic staff are the smallest group, comprising only 2 per cent of the total population in 2003-04. Overall, the number of staff increased throughout the period, but the basic structure appears to have remained the same.

Table 7 Numbers and FTE of academic and assistant academic staff

Grade	Contract	1995-96		2000-01		2003-04	
		Number (%)	FTE (%)	Number (%)	FTE (%)	Number (%)	FTE (%)
Academic	Permanent	51,309 63%	49,416 66%	54,645 61%	52,102 64%	59,309 62%	56,047 64%
	Non-permanent	7,664 9%	6,606 9%	9,148 10%	7,773 10%	8,286 9%	7,033 8%
Assistant academic	Permanent	1,043 1%	963 1%	1,283 1%	1,193 1%	1,792 2%	1,649 2%
	Non-permanent	20,830 26%	18,142 24%	23,812 27%	20,407 25%	26,326 28%	22,754 26%
Total		80,846 100%	75,128 100%	88,888 100%	81,475 100%	95,713 100%	87,483 100%

Notes: The FTE figures are obtained by summing academic contracts over all staff included in this table. Pop C

² There are slight differences in the numbers for 1995-96 to 2000-01 which are caused by a necessary adjustment to the methods used to extract the population from the HESA data. These do not have any significant effect on the results.

30. Table 8 shows a breakdown for all staff by type of institution. The table shows that research orientated universities have proportionally more staff on researcher grades (41 per cent) than other HEIs. In addition, 59 per cent of staff in other universities, and 54 per cent of staff in general colleges and specialist HEIs, are lecturers, compared with only 25 per cent of staff in research universities.

Table 8 Type of institution by grade, 2003-04

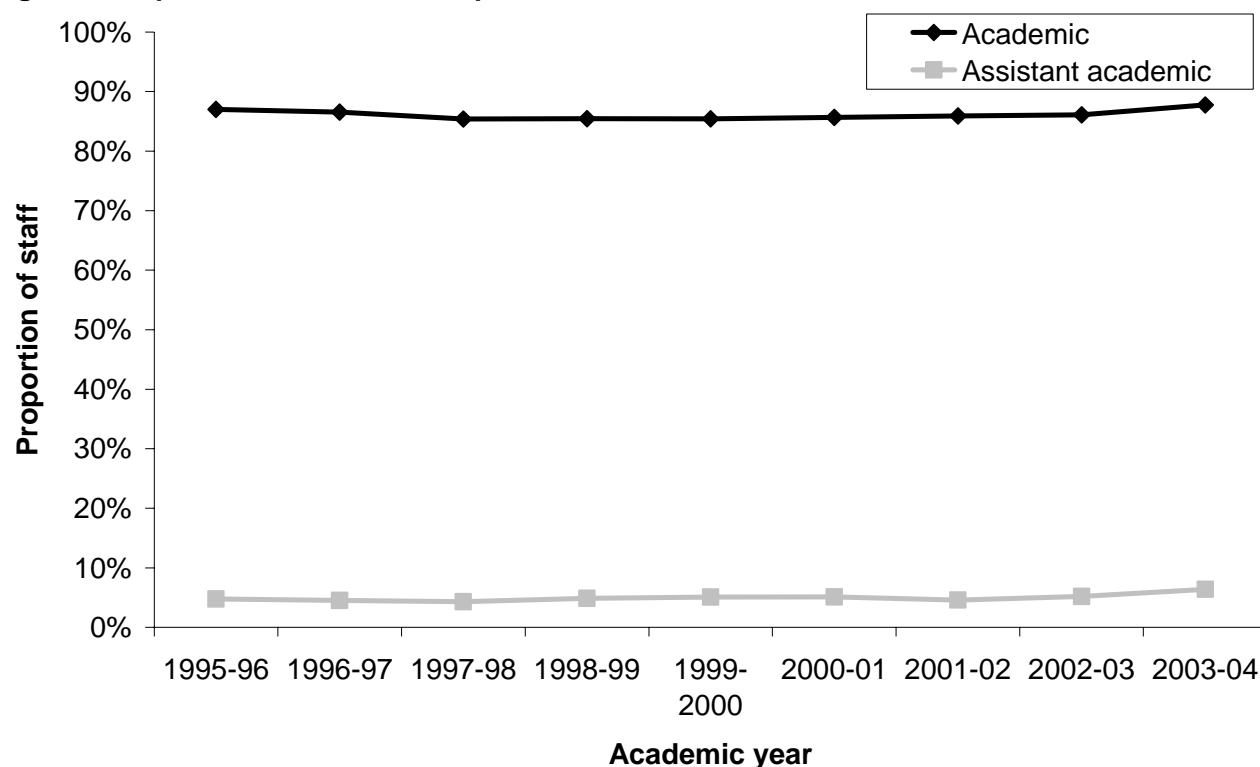
Grade	Research orientated universities	Other universities	General colleges/ specialist HEIs	Total
Professors	7,718	2,872	1,083	11,673
(%)	14%	10%	10%	12%
Senior lecturers and researchers	10,799	5,907	2,011	18,717
(%)	19%	20%	19%	20%
Lecturers	13,932	17,555	5,718	37,205
(%)	25%	59%	54%	39%
Researchers	22,934	3,370	1,814	28,118
(%)	41%	11%	17%	29%
Total	55,383	29,704	10,626	95,713
(%)	100%	100%	100%	100%

Notes: Pop C

Non-permanent contracts

31. Figure 3 shows that, across the period, only 4 to 6 per cent of assistant academics are on permanent contracts, compared with 85 to 88 per cent of academic staff. The trends have largely remained stable since 1995-96.

Figure 3 Proportion of staff who are permanent



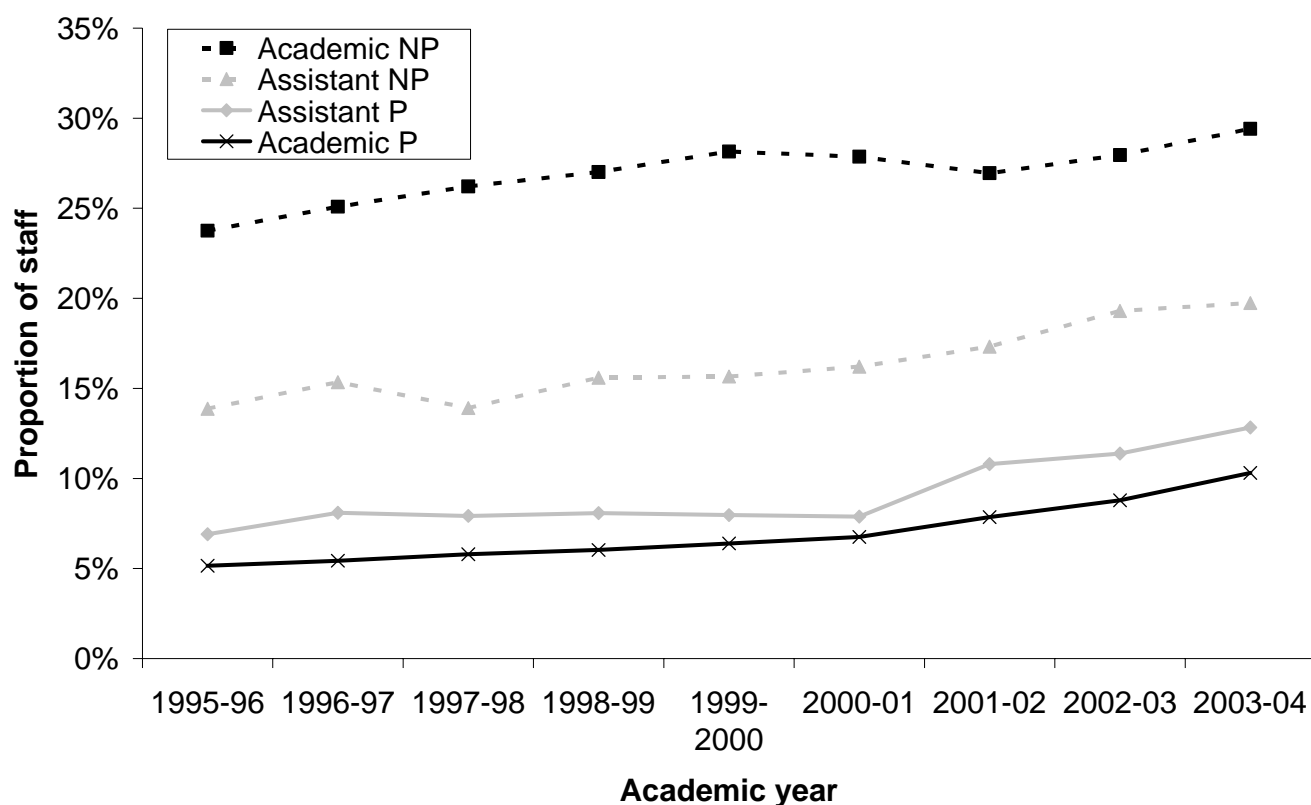
Notes: Pop C

Part-time working

32. Figure 4 shows the proportion of academics and assistant academics who are part-time, by permanent (P) and non-permanent (NP) contracts. It should be noted that the numbers of permanent assistant academics is small, especially when considering the increase in part-time working from 2000-01 to 2001-02.

33. We see from this figure that the proportion of part-time staff is increasing, particularly since 2000-01 in the case of permanent staff.

Figure 4 Proportion of staff who are part-time



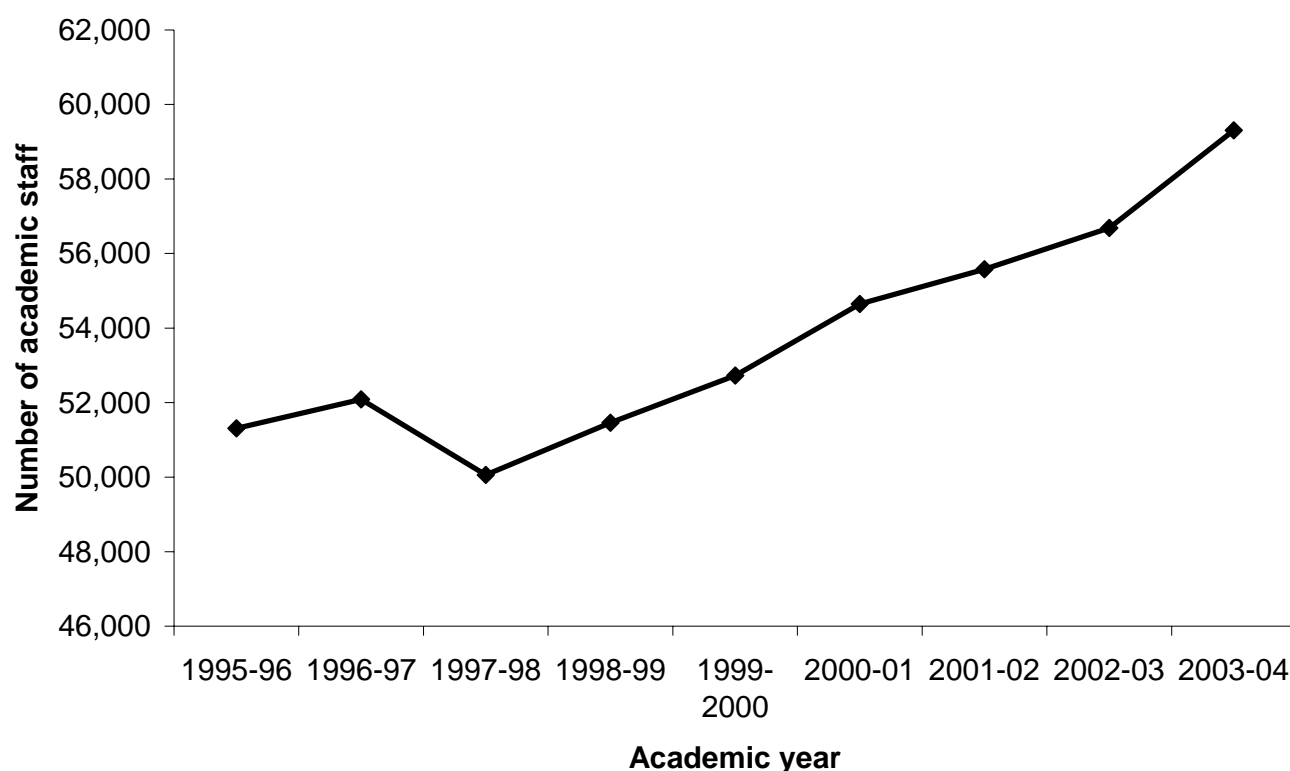
Note: We have excluded the returns from one institution where the available data were not credible. Pop C

Permanent academic staff: Trends and attributes

34. We now reduce our focus further to permanent academic staff only; a more detailed look at non-permanent staff is given in Annexes D and E.

35. Figure 5 shows that the number of permanent academic staff dropped in 1997-98, and then rose steadily for the remainder of the period. The reasons for this dip are unknown. HEFCE 2002/43 examined the possibility that it was caused by the 1996 Research Assessment Exercise (RAE), with, for example, some staff postponing retirement until after the exercise. However, the report concluded this was not the case, as the numbers of research associated and non-research associated staff followed similar trends³. Further, Figure 5 shows that there was no recurrence of the dip around the 2001 RAE.

Figure 5 Numbers of permanent academic staff, 1995-96 to 2003-04



Notes: Pop D

36. Table 9 shows the numbers of full- and part-time staff making up the permanent academic population. Along with Figure 4, it shows that the numbers of part-time staff are comparatively small but increasing.

³ HEFCE 2002/43, page 8, paragraphs 44 and 46

Table 9 Permanent academic staff by mode

Academic year	Full-time	Part-time	Total	% Part-time
1995-96	48,698	2,611	51,309	5%
1996-97	49,296	2,790	52,086	5%
1997-98	47,201	2,859	50,060	6%
1998-99	48,403	3,056	51,459	6%
1999-2000	49,407	3,319	52,726	6%
2000-01	51,009	3,636	54,645	7%
2001-02	51,262	4,318	55,580	8%
2002-03	51,764	4,922	56,686	9%
2003-04	53,260	6,049	59,309	10%

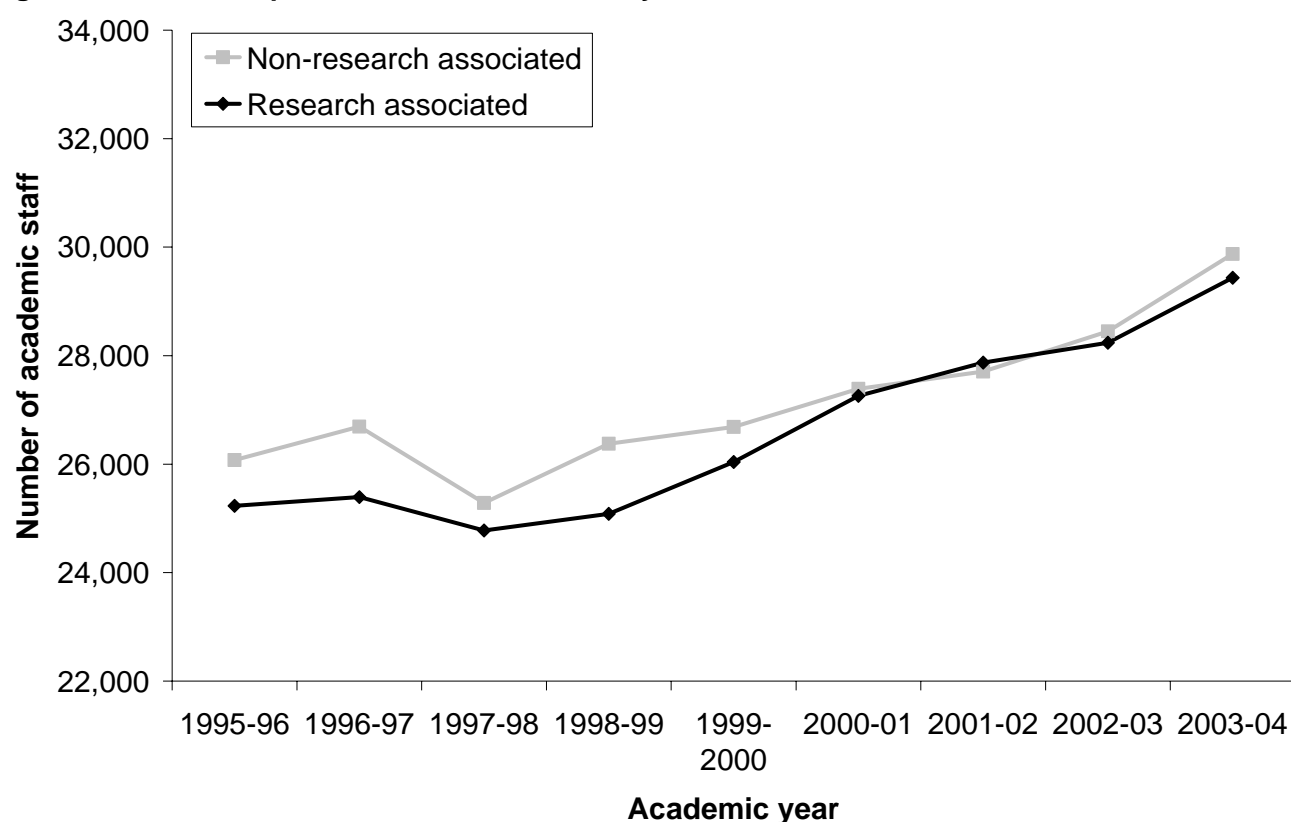
Notes: Pop D

Research association

37. Staff are classed as 'research associated' if the cost centre in which they operate submitted at least 50 per cent of staff to the 1996⁴ RAE and received a rating of 3a or above.

Figure 6 shows numbers of research associated and non-research associated staff from 1995-96 to 2003-04.

Figure 6 Numbers of permanent academic staff by research association



Notes: Pop D

⁴ 1996 RAE assessment used to produce a consistent baseline.

Subject area

38. Table 10 shows the change in numbers of staff by subject area. Note that growth and decline in numbers of staff in unknown or combined subjects is likely to reflect trends in data quality. Therefore, the increase from 1995-96 to 2000-01 can probably be attributed to improved data returns, while the drop from 2000-01 to 2003-04 is related to the introduction of the new HESA staff record in 2003-04, since new data validation rules allowed for greater numbers of default entries.

39. 'Subjects allied to medicine' has experienced high growth (66 per cent) over the period, due to mergers between HEIs and nursing schools. Staff in 'computer science/librarianship/information science' are the second fastest growing group, having increased by 56 per cent between 1995-96 and 2003-04. There are four areas in which staff numbers are in decline: chemistry, physics, mathematical sciences and 'engineering/technology/building/architecture'.

Table 10 Numbers of permanent academic staff by subject area

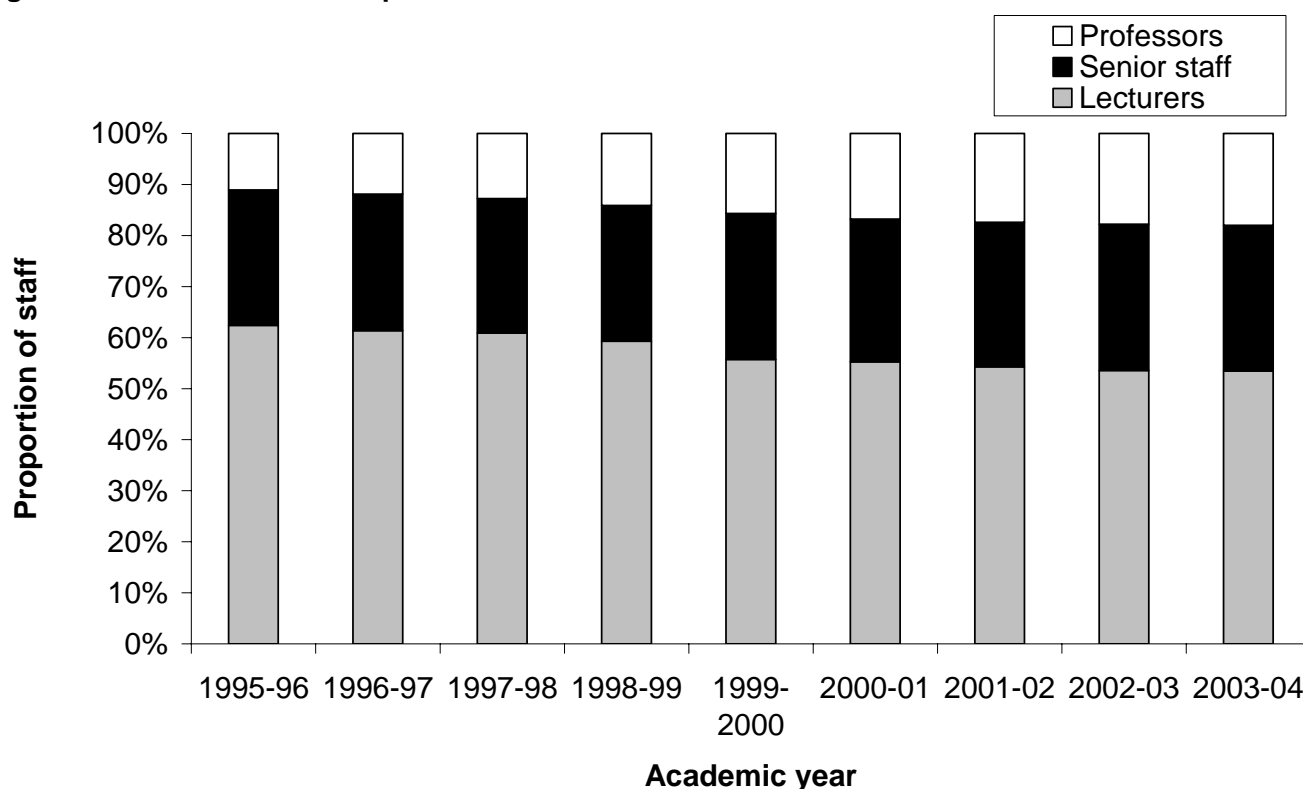
Subject	1995-96	2000-01	2003-04	% Change (1995-2003)
Subjects allied to medicine	3,117	4,615	5,178	66%
Biological sciences	4,656	5,493	5,882	26%
Veterinary sciences/agriculture and related	474	498	547	15%
Chemistry	1,642	1,552	1,484	-10%
Physics	1,833	1,765	1,646	-10%
Other physical sciences	1,316	1,537	1,562	19%
Mathematical sciences	2,212	2,130	2,000	-10%
Computer science/librarianship/info science	1,935	2,560	3,018	56%
Engineering/technology/building/architecture	5,700	5,233	4,922	-14%
Social/political/economic studies	6,172	6,787	6,893	12%
Law	1,562	1,794	1,914	23%
Business/administrative studies	3,014	3,504	3,858	28%
Languages	3,965	4,055	4,051	2%
Humanities	3,158	3,458	3,458	9%
Creative arts/design	2,561	3,170	3,634	42%
Education	2,894	3,214	3,545	22%
Unknown and combined subjects	5,098	3,280	5,717	12%
All subjects	51,309	54,645	59,309	16%

Notes: Pop D

Grade

40. Figure 7 shows a continuation, from 2000-01 onwards, of the move towards higher grades which the previous report highlighted. The proportion of professors increased from 12 per cent in 1995-96 to 17 per cent by 2000-01, and by 2003-04 had risen by a further percentage point. The number of lecturers decreased between 1995-96 and 2000-01 and increased towards 2003-04, although as a proportion of overall staff they continue to decline.

Figure 7 Grade distribution of permanent academic staff



Notes: Pop D

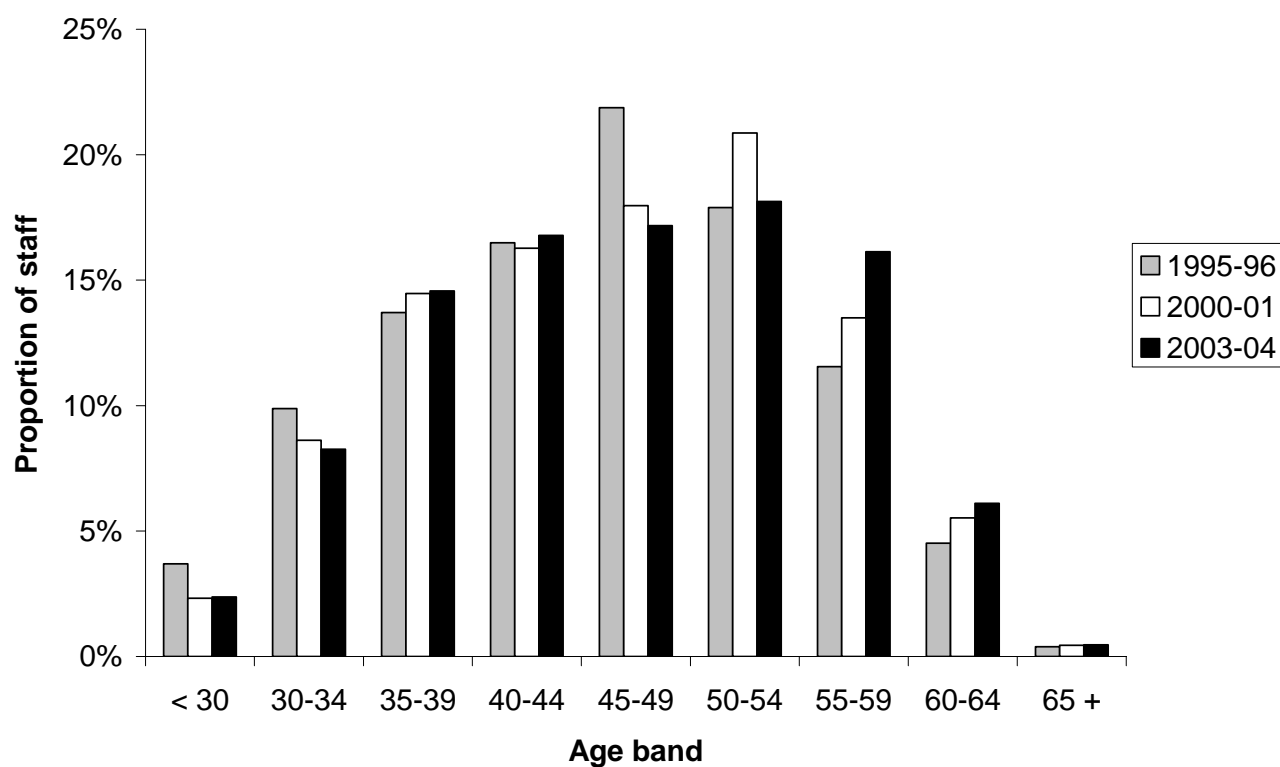
Age

41. The previous report showed that the proportion of permanent academic staff who were aged 50 or above had increased⁵. Figure 8 shows the age profile as displayed in that report, with the addition of 2003-04. The proportion of staff aged over 50 has remained about the same, although that of those aged over 55 has gone up. There is also an increase in the proportion of staff between the ages of 35 and 44.

42. Figure 9 shows how the proportion of staff aged 50 or over has changed across the whole period by grade. It shows that there was around a eight percentage point rise in the proportion of professors who are aged 50 or over between 1995-96 and 2003-04. A similar but smaller rise of around five percentage points is seen for lecturers. However, the same pattern is not repeated for senior lecturers and senior researchers, where the proportion of staff aged 50 or over has dropped since 2000-01.

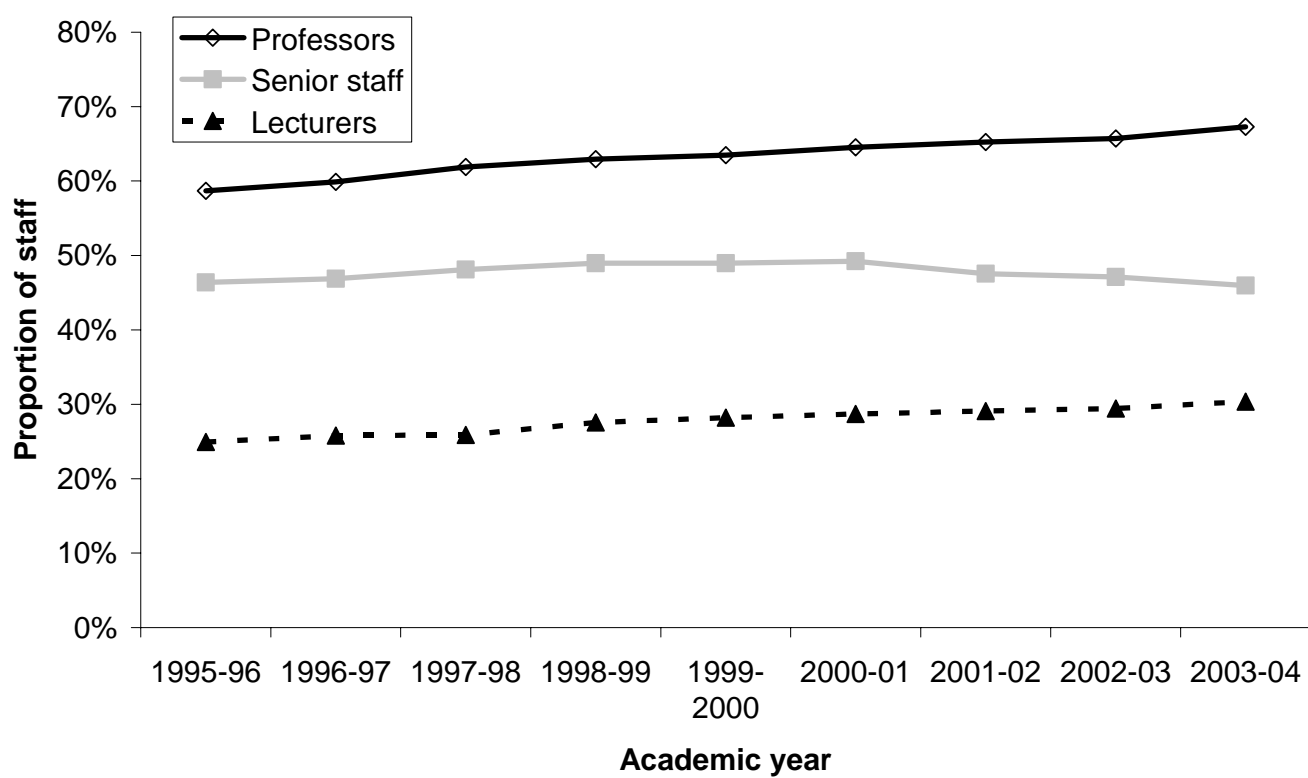
⁵ HEFCE 2002/43, page 11, paragraph 52

Figure 8 Age profile of permanent academic staff



Notes: Pop D

Figure 9 Proportion of permanent academic staff aged 50 or over



Notes: Pop D

43. Table 11 shows that education is the subject area with the largest proportion of staff aged 50 and over (50 per cent). Computer science has the smallest proportion (32 per cent), but this is a significant increase from 1995-96 when only 21 per cent of computer science staff were 50 or over. The proportions of chemistry and physics staff who are aged 50 or over have decreased, from 51 and 52 per cent respectively in 1995-96 to 39 and 44 per cent respectively in 2003-04; these are the only subjects where there has been a drop in staff aged 50 and over.

44. More extensive age profiles for subjects allied to medicine, chemistry, physics, mathematical sciences, computing and engineering are at Annexes D and E.

Table 11 Permanent academic staff by subject and proportion aged 50 or over

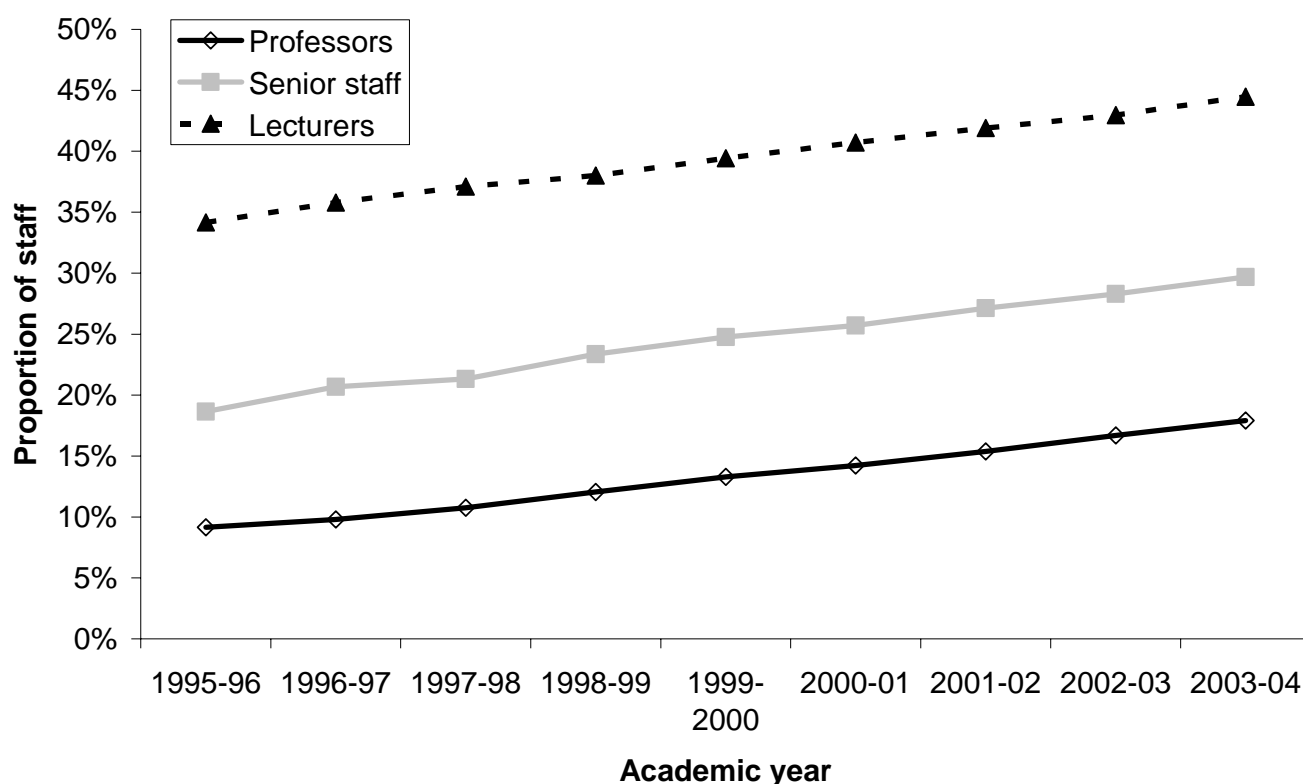
Subject	1995-96		2000-01		2003-04	
	Total	% 50+	Total	% 50+	Total	% 50+
Subjects allied to medicine	3,117	23%	4,615	31%	5,178	35%
Biological sciences	4,656	33%	5,493	38%	5,882	39%
Veterinary sciences/agriculture and related	474	35%	498	36%	547	38%
Chemistry	1,642	51%	1,552	45%	1,484	39%
Physics	1,833	52%	1,765	46%	1,646	44%
Other physical sciences	1,316	34%	1,537	34%	1,562	36%
Mathematical sciences	2,212	44%	2,130	47%	2,000	48%
Computer science/librarianship/info science	1,935	21%	2,560	30%	3,018	32%
Engineering/technology/building/architecture	5,700	38%	5,233	42%	4,922	44%
Social/political/economic studies	6,172	31%	6,787	44%	6,893	46%
Law	1,562	21%	1,794	30%	1,914	35%
Business/administrative studies	3,014	27%	3,504	38%	3,858	44%
Languages	3,965	40%	4,055	45%	4,051	44%
Humanities	3,158	39%	3,458	45%	3,458	45%
Creative arts/design	2,561	29%	3,170	38%	3,634	39%
Education	2,894	35%	3,214	48%	3,545	50%
Unknown and combined subjects	5,098	35%	3,280	42%	5,717	40%
Total	51,309	34%	54,645	40%	59,309	41%

Notes: Pop D

Sex

45. HEFCE 2002/43 highlighted a steady increase in the proportion of staff, within each grade, who were female. Figure 10 illustrates the continuation of this trend. This is especially notable for professors; Table 12 shows the number of female professors to have increased by 267 per cent between 1995-96 and 2003-04.

Figure 10 Proportion of permanent academic staff who are female



Notes: Pop D

Table 12 Growth in numbers of male and female permanent academic staff, by grade

Grade	2003-04 numbers		Growth 1995 to 2003	
	Males	Females	Males	Females
Professors	8,751	1,910	69%	267%
Senior lecturers and researchers	11,911	5,029	8%	98%
Lecturers	17,604	14,104	-16%	29%

Note: Pop D

46. Table 13 shows the sex of permanent academic staff by subject area. The proportion of female staff has increased in all subject areas. 'Subjects allied to medicine' and education are the only two female-dominated subjects, at 60 and 56 per cent respectively (2003-04). Sciences and engineering have the lowest proportions of female staff.

Table 13 Permanent academic staff by subject and sex

Subject	1995-96		2000-01		2003-04	
	Total	% Female	Total	% Female	Total	% Female
Subjects allied to medicine	3,117	56%	4,615	59%	5,178	60%
Biological sciences	4,656	26%	5,493	30%	5,882	33%
Veterinary sciences/agriculture and related	474	17%	498	23%	547	30%
Chemistry	1,642	8%	1,552	10%	1,484	14%
Physics	1,833	7%	1,765	8%	1,646	10%
Other physical sciences	1,316	13%	1,537	18%	1,562	19%
Mathematical sciences	2,212	15%	2,130	17%	2,000	18%
Computer science/librarianship/info science	1,935	24%	2,560	27%	3,018	29%
Engineering/technology/building/architecture	5,700	8%	5,233	10%	4,922	12%
Social/political/economic studies	6,172	30%	6,787	33%	6,893	37%
Law	1,562	38%	1,794	41%	1,914	42%
Business/administrative studies	3,014	27%	3,504	33%	3,858	35%
Languages	3,965	38%	4,055	44%	4,051	48%
Humanities	3,158	25%	3,458	29%	3,458	30%
Creative arts/design	2,561	32%	3,170	36%	3,634	38%
Education	2,894	46%	3,214	48%	3,545	56%
Unknown and combined subjects	5,098	32%	3,280	39%	5,717	40%
Total	51,309	27%	54,645	32%	59,309	35%

Notes: Pop D

Nationality

47. Table 14 shows the change in numbers of staff by nationality. The biggest increase is in the number of Eastern and Central European staff, which has increased by 164 per cent since 1995-96. Western European and Scandinavian staff are the largest group after UK nationals, and have also grown significantly.

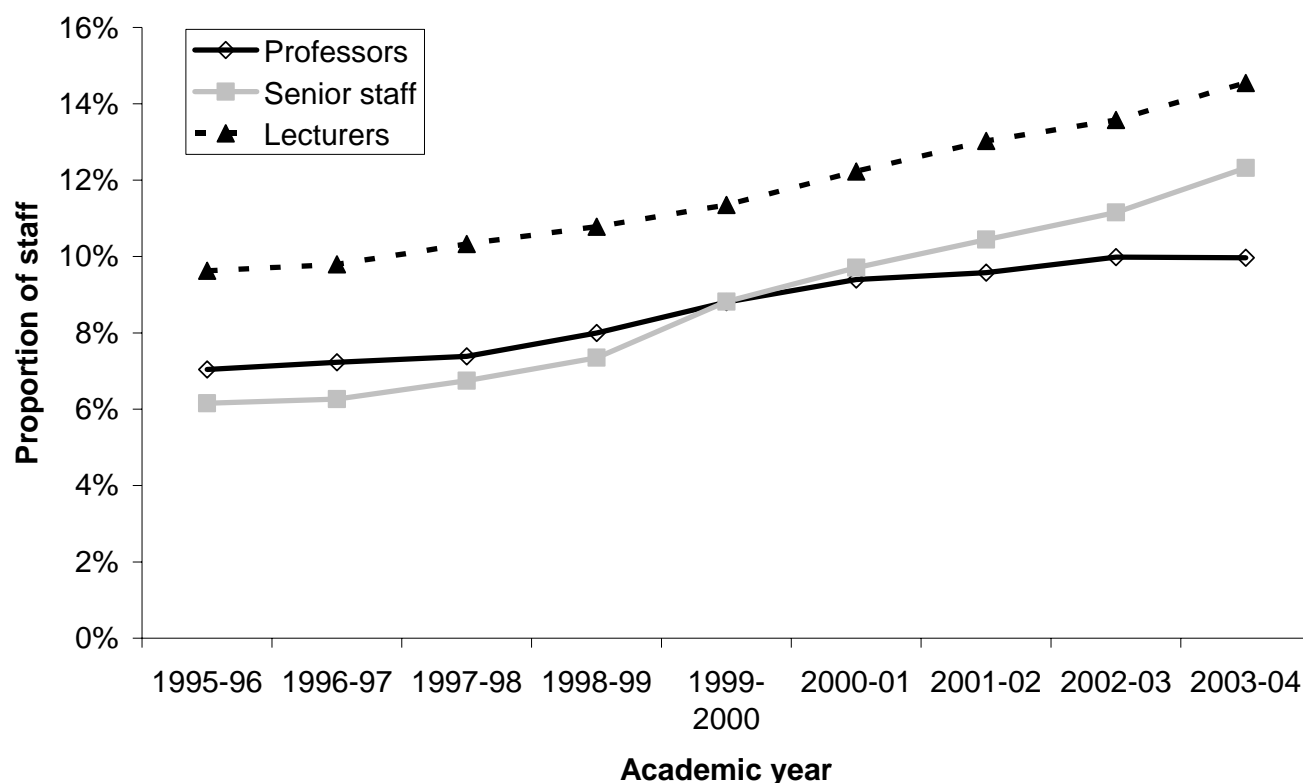
Table 14 Permanent academic staff by nationality

Nationality	1995-96	2000-01	2003-04	% Change (1995-2003)
UK	42,966	46,418	50,298	10%
Western Europe and Scandinavia	1,285	2,153	3,018	120%
Eastern and Central Europe	286	588	806	164%
Australia, US, Canada and New Zealand	1,235	1,603	1,926	46%
China, Japan and East Asia	268	388	526	84%
Middle East and Central Asia	430	517	678	48%
Other non-European nationality	433	507	609	32%
Unknown	4,406	2,471	1,448	N/A
Total	51,309	54,645	59,309	16%

Note: The percentage change shown is normalised. Pop D

48. Figure 11 shows the proportion of staff who are non-UK nationals⁶, split by grade. It shows increases in levels of non-UK staff across all grades. For example, the proportion of senior lecturers and senior researchers who are non-UK nationals doubled across the period – from around 6 per cent to 12 per cent.

Figure 11 Proportion of permanent academic staff who are non-UK nationals



Notes: Pop D

49. Table 15 shows the proportion of permanent academic staff who are non-UK nationals, split by subject area. Excluding those whose academic discipline is unknown, languages has the highest proportion of non-UK nationality staff, at 19 per cent. Education has the lowest, at 4 per cent.

50. A fuller breakdown by nationality for subjects allied to medicine, chemistry, physics, mathematical sciences, computing and engineering is at Annexes D and E.

⁶ Percentages based on staff with known nationalities.

Table 15 Permanent academic staff by subject and nationality, 2003-04

Subject	Number	Total known	% Non-UK national
Subjects allied to medicine	5,178	5,105	8%
Biological sciences	5,882	5,814	10%
Veterinary sciences/agriculture and related	547	542	8%
Chemistry	1,484	1,468	9%
Physics	1,646	1,625	15%
Other physical sciences	1,562	1,541	7%
Mathematical sciences	2,000	1,987	15%
Computer science/librarianship/info science	3,018	2,929	16%
Engineering/technology/building/architecture	4,922	4,820	15%
Social/political/economic studies	6,893	6,731	14%
Law	1,914	1,841	14%
Business/administrative studies	3,858	3,763	11%
Languages	4,051	3,984	19%
Humanities	3,458	3,416	14%
Creative arts/design	3,634	3,499	7%
Education	3,545	3,467	4%
Unknown and combined subjects	5,717	5,329	25%
Total	59,309	57,861	13%

Notes: Pop D

Ethnicity

51. Table 16 shows an increase in the proportion of staff from a non-white ethnic background, from 6 per cent in 1995-96 to 8 per cent in 2003-04. This growth can be attributed mainly to an increase in Asian staff, primarily Indian and Chinese.

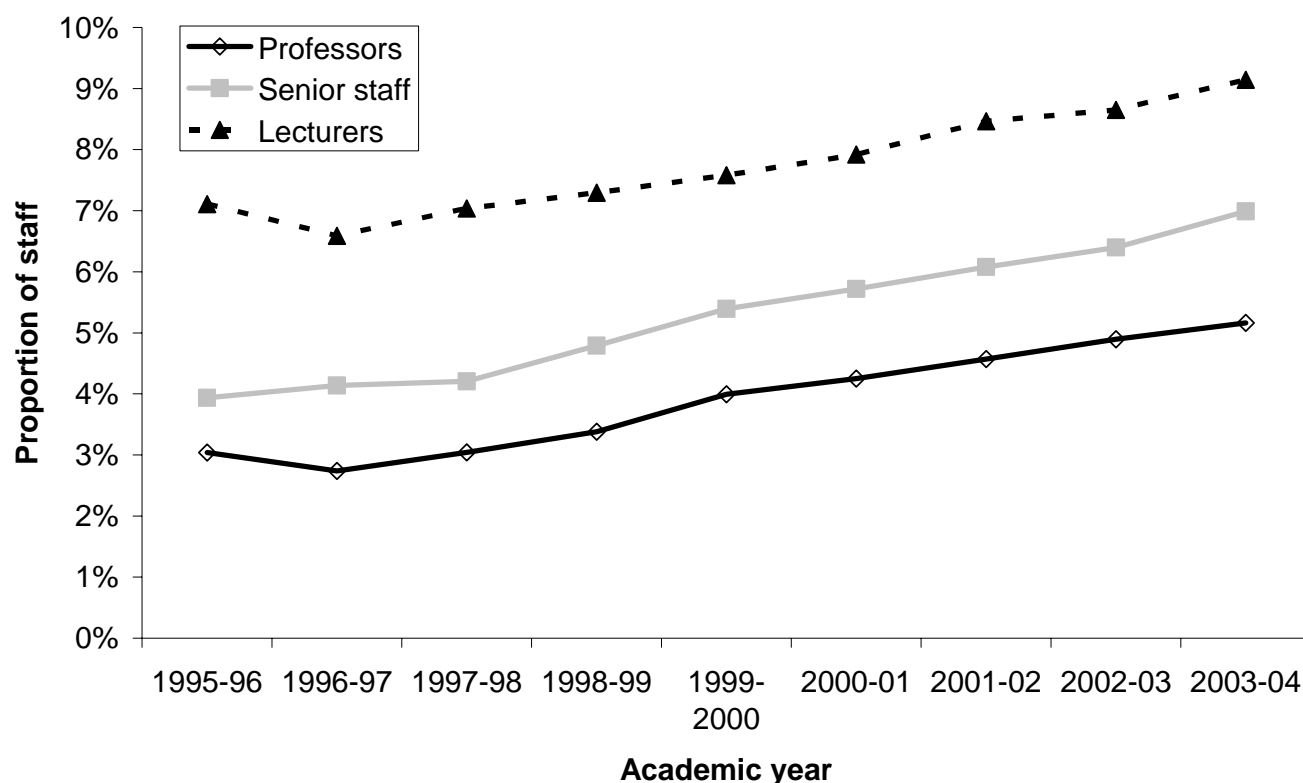
Table 16 Permanent academic staff by ethnicity

Ethnicity	1995-96		2000-01		2003-04	
	Number	% of known	Number	% of known	Number	% of known
Total white	41,685	94%	46,495	93%	51,209	92%
Bangladeshi	20		36		55	
Indian	428		550		775	
Pakistani	66		112		177	
Chinese	271		488		742	
Asian other	320		437		609	
Total Asian	1,105	2%	1,623	3%	2,358	4%
African	217		266		353	
Caribbean	177		246		305	
Black other	81		122		93	
Total black	475	1%	634	1%	751	1%
Total other	996	2%	1,079	2%	1,235	2%
Total known	44,261	100%	49,831	100%	55,553	100%
Not known	7,048		4,814		3,756	
Total	51,309		54,645		59,309	

Note: Pop D

52. Figure 12 shows the change in the proportion of staff from non-white ethnic groups between 1995-96 and 2003-04, split by grade. It shows that levels of non-white ethnic groups for all grades have risen steadily since 1996-97.

Figure 12 Proportion of permanent academic staff from non-white ethnic groups



Note: Excludes staff with unknown ethnicity. Pop D

53. Table 17 shows that the growth in number of non-white ethnic groups has been particularly notable in the higher grades, with a 218 per cent increase in ethnic minority professors between 1995-96 and 2003-04.

Table 17 Growth in numbers of permanent academic staff, by ethnicity

Grade	Numbers in 2003-04		Growth 1995 to 2003	
	White	Other ethnicity	White	Other ethnicity
Professors	10,111	550	83%	218%
Senior lecturers and researchers	15,756	1,184	20%	121%
Lecturers	28,809	2,900	-3%	27%

Note: Percentage growth has been normalised to account for unknown data. Pop D

54. Table 18 shows the proportion of staff from non-white ethnic backgrounds, split by subject area. It shows that the highest proportions from non-white ethnic backgrounds are in engineering and computer science. The highest proportions from white ethnic backgrounds are in other physical sciences.

Table 18 Permanent academic staff by subject and ethnicity, 2003-04

Subject	Headcount	Total known	% White
Subjects allied to medicine	5,178	4,946	91%
Biological sciences	5,882	5,557	95%
Veterinary sciences/agriculture/related subjects	547	527	96%
Chemistry	1,484	1,380	94%
Physics	1,646	1,517	94%
Other physical sciences	1,562	1,454	97%
Mathematical sciences	2,000	1,857	94%
Computer science/librarianship/info science	3,018	2,854	88%
Engineering/technology/building/architecture	4,922	4,630	85%
Social/political/economic studies	6,893	6,461	91%
Law	1,914	1,766	92%
Business/administrative studies	3,858	3,701	90%
Languages	4,051	3,731	94%
Humanities	3,458	3,187	96%
Creative arts/design	3,634	3,381	96%
Education	3,545	3,432	96%
Unknown and combined subjects	5,717	5,172	90%
Total	59,309	55,553	92%

Notes: Pop D

Salary

55. Table 19 shows that the median annual salary for all permanent academic staff is £35,370⁷ and 12 percent of staff have an annual salary of greater than £50,000. It also shows that the subject areas with the highest median salaries and the largest proportions of staff on annual salaries greater than £50,000 are chemistry and physics. The subjects with the lowest proportions of staff on high salaries include 'creative arts and design' and education, at 3 per cent and 4 per cent respectively.

⁷ £35,370 represents point 80 of the interim national pay spine negotiated by the Joint Negotiating Committee for Higher Education Staff (JNCHES)

Table 19 Salary of permanent academic staff, by subject area, 2003-04

Subject	Headcount	Total with known salary	Median salary	% Greater than £50,000
Subjects allied to medicine	5,178	5,157	£35,370	11%
Biological sciences	5,882	5,864	£38,920	18%
Veterinary sciences/agriculture and related	547	546	£35,880	11%
Chemistry	1,484	1,484	£40,010	20%
Physics	1,646	1,636	£41,330	21%
Other physical sciences	1,562	1,553	£38,920	16%
Mathematical sciences	2,000	1,990	£39,350	18%
Computer science/librarianship/info science	3,018	3,003	£35,370	6%
Engineering/technology/building/architecture	4,922	4,899	£37,770	14%
Social/political/economic studies	6,893	6,857	£36,460	13%
Law	1,914	1,909	£35,370	13%
Business/administrative studies	3,858	3,833	£35,370	10%
Languages	4,051	4,019	£35,370	10%
Humanities	3,458	3,440	£36,460	12%
Creative arts/design	3,634	3,606	£35,370	3%
Education	3,545	3,509	£35,370	4%
Unknown and combined subjects	5,717	5,479	£35,370	14%
All subjects	59,309	58,784	£35,370	12%

Note: Median salary has been rounded to the nearest £10. Pop D

Permanent academic staff: Projections

Introduction

56. In our previous report (HEFCE 2002/43), a series of projections were undertaken to examine the number of recruits required under three different protocols: 'box-flow'; 'current-recruitment'; and 'recruit-to-maintain/expand'. The starting year for these projections was 2000-01, and leaving/recruitment rates were based on 1997-98 and 1998-99 levels. The projections were provided for all HEIs across the UK.

57. In this section, we examine only one of the protocols: recruit-to-maintain/expand. The last year of known data is 2003-04 and this forms our base year for projections. However, due to a lack of available data, we are unable to update the information on leaving/recruitment rates and these are shown at the 1997-98 and 1998-99 levels⁸.

58. Even so, we have tested the results from the previous model and this is reported in Annex B. The results indicate that there may have been an increase in retention of older staff and in the promotion rates to professor for the years 1999-2000 to 2003-04 compared with the levels seen in 1997-98 and 1998-99. These conclusions should be taken into account when considering the projections given in the following sections as the original retention/promotions levels seen in 1997-98 and 1998-99 are used.

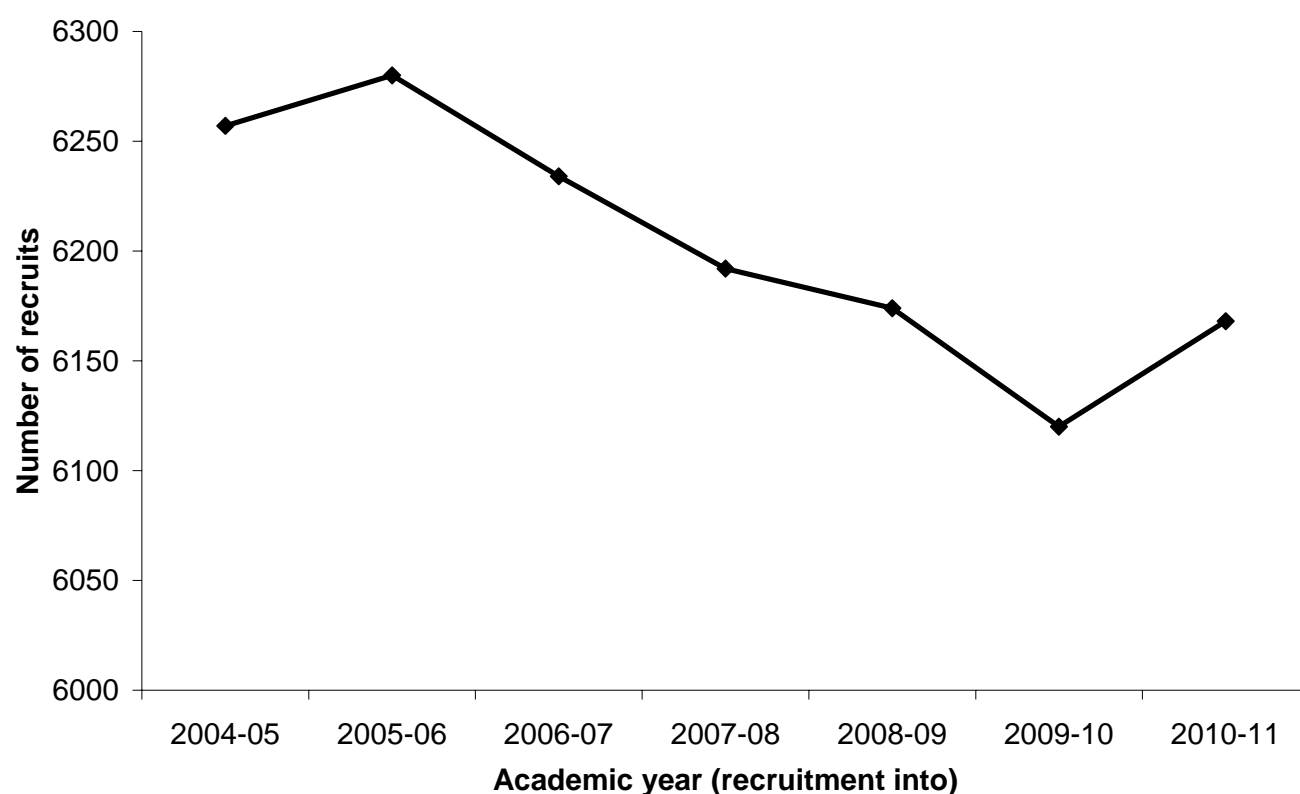
⁸ The leaving rate in 1997-98 was 7.0% and in 1998-99 6.2%. For further details see Annex D2 of HEFCE 2002/43.

59. As in the previous report, the projection results reported here apply to leaving rates and recruitment to all the HEIs in the country.

Recruit to maintain

60. Figure 13 shows the number of recruits required between 2004-05 and 2010-11 to maintain 2003-04 staffing levels. The number of recruits required in later years is projected to decrease slightly.

Figure 13 Projected number of recruits required: 2004-05 to 2010-11



Notes: Pop D*

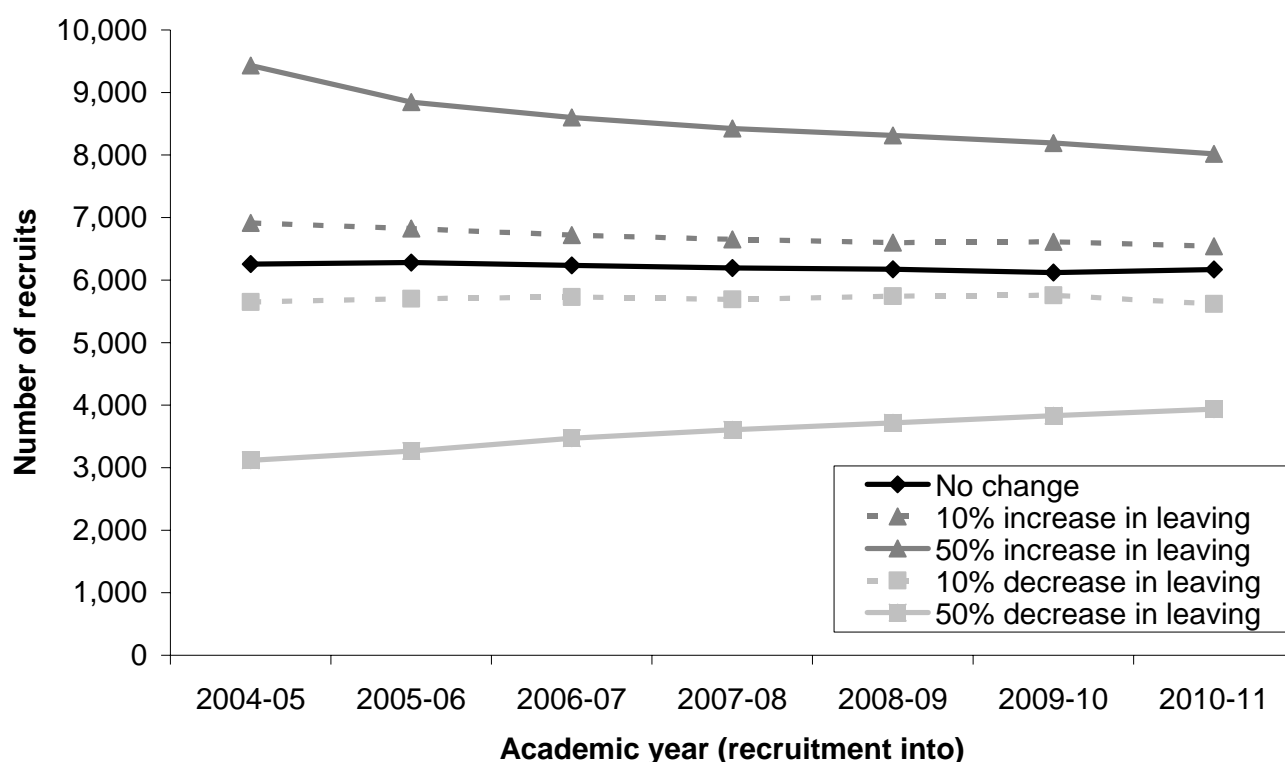
61. Table 20 shows the number of recruits in 2010-11 required to maintain 2003-04 levels, split by subject area, compared with the number required in 2004-05. Some subject areas will require more recruits in later years due to a changing leavers profile (for example, law and business), and some will require less (for example, chemistry and physics).

Table 20 Projected number of recruits required in 2004-05 and 2010-11, by subject area

Subject area	Recruitment required into		% change
	2004-05	2010-11	
Subjects allied to medicine	470	510	9%
Biological sciences	530	560	6%
Veterinary sciences	80	70	-13%
Chemistry	150	110	-27%
Physics	180	150	-17%
Other physical sciences	160	130	-19%
Mathematical sciences	210	180	-14%
Computer science	330	330	0%
Engineering	600	590	-2%
Social policy	720	720	0%
Law	160	180	13%
Business	400	450	13%
Languages	390	390	0%
Humanities	330	310	-6%
Creative arts	370	410	11%
Education	460	450	-2%
Unknown	650	560	-14%
Total	6,250	6,160	-1%

Notes: Pop D*

Figure 14 Projected number of recruits required to maintain 2003-04 levels, with varying leaving rates



Notes: Pop D*

62. Figure 14 shows the number of recruits required if the recruit-to-maintain approach is taken, using 2003-04 staffing levels as the base. It provides scenarios under five assumptions:

- no change in leaving rates for all staff
- 10 per cent increase in leaving rates
- 50 per cent increase in leaving rates
- 10 per cent decrease in leaving rates
- 50 per cent decrease in leaving rates.

63. It shows a wide variation in the projected number of recruits required, depending on the assumptions made. With a 50 per cent increase in leaving rates, nearly 10,000 staff are required in 2004-05, compared against around 3,000 staff when a 50 per cent decrease in leaving rates is assumed.

Recruit to expand

64. It is also possible to model what staff recruitment would be required if staffing numbers needed to increase year-on-year. Table 21 shows the implied year-on-year changes in staff levels required to meet Department for Education and Skills (DfES) student number targets (in line with the 2005 grant letter⁹) and a slightly reduced staff: student ratio¹⁰ by 2007-08.

65. DfES student numbers are only projected to 2007-08 so for the period 2008-09 to 2010-11 two illustrative scenarios are provided based upon the assumption that:

- the Higher Education Initial Participation Rate (HEIPR) reaches 50 per cent in 2010-11 (Scenario 1)
- the forecasted HEIPR level assumed for 2007-08 in the DfES student numbers¹¹ remains constant until 2010-11 (Scenario 2).

Table 21 Implied staff levels required to meet DfES student number targets up to 2007-08 and illustrative levels until 2010-11

Based upon	Year	Scenario 1	Scenario 2
DfES student numbers	From 2003-04 to 2004-05	4.5%	
	From 2004-05 to 2005-06	2.7%	
	From 2005-06 to 2006-07	2.5%	
	From 2006-07 to 2007-08	2.3%	
Illustrative	From 2007-08 to 2008-09	3.1%	1.6%
	From 2008-09 to 2009-10	4.4%	1.4%
	From 2009-10 to 2010-11	5.6%	0.9%

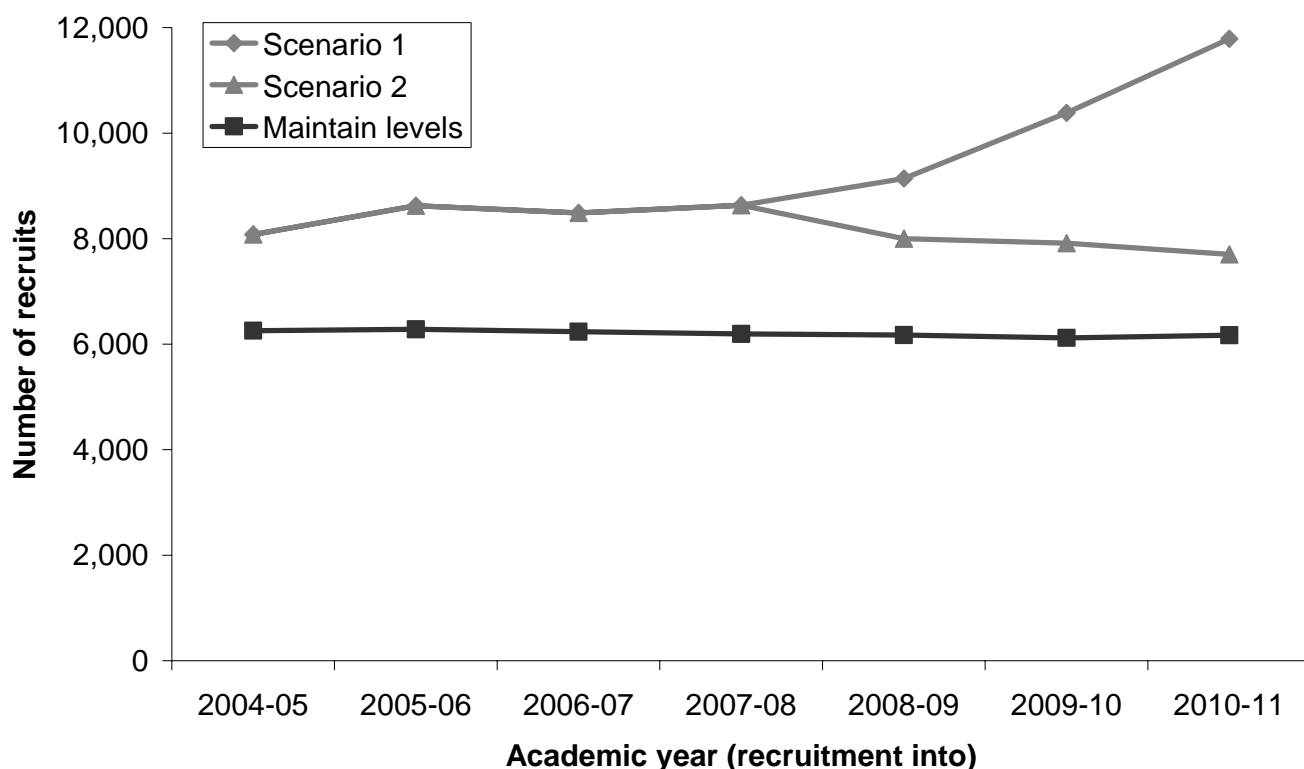
⁹ 'Higher Education Funding 2005-06 to 2007-08', Grant letter 2005 from the Secretary of State to HEFCE. See www.hefce.ac.uk/news/2004/14 December 2004. See <http://www.hefce.ac.uk/news/hefce/2004/grantletter/letter.asp> for further details.

¹⁰ Assumed to be 18.0 per student in 2002-03, reducing by 0.08 per annum until 2007-08 (17.6 per student) and then remaining constant.

¹¹ 44 per cent

66. Figure 15 shows the number of recruits needed to meet planned expansion in student numbers up to 2007-08 (as outlined in the grant letter) and to meet illustrative rates of student number expansion until 2010-11, compared with the level of recruitment required to maintain current numbers. It shows that recruitment from steady state levels would have to increase by a minimum of 1,000 to meet these scenarios.

Figure 15 Projected number of recruits required: 2003-04 to 2010-11

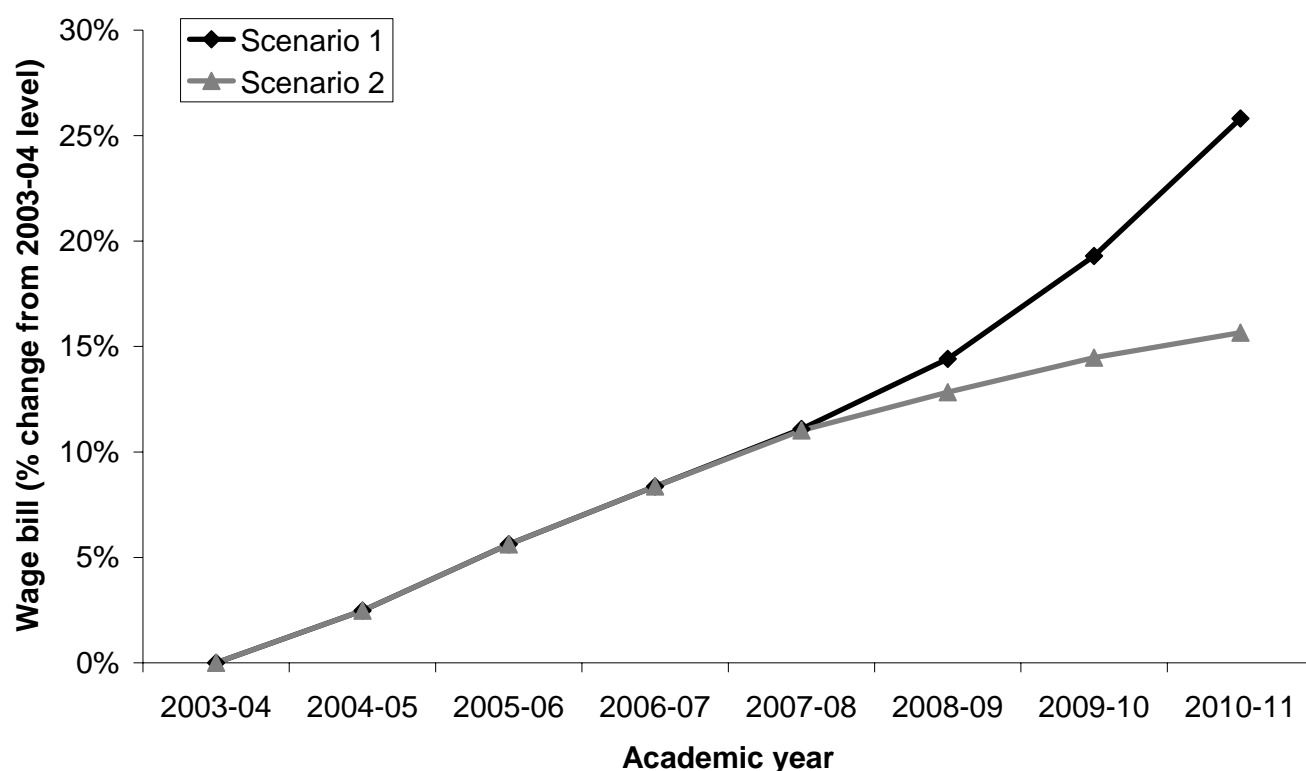


Notes: Pop D*

67. Figure 16 shows staff costs relative to 2003-04 based on the implied staff levels from the different scenarios. It shows that by 2010-11, under Scenario 1, the wage bill will need to be around 25 per cent higher than in 2003-04.

68. Table 22 shows the number of recruits in 2010-11 required to expand 2003-04 levels for the two scenarios, split by subject area, compared with the number required to maintain 2003-04 numbers. It shows that recruitment levels would have to increase by over 100 per cent for some subject areas in Scenario 1.

Figure 16 Implied wage bill increase implied by the scenarios



Notes: Pop D*

Table 22 Projected number of recruits required in 2010-11, by subject area

Subject area	Maintain current numbers	Scenario 1		Scenario 2	
		No.	% change	No.	% change
Allied to Medicine	510	990	94%	640	25%
Biological Sciences	560	1,140	104%	690	23%
Veterinary Sciences	70	130	86%	90	29%
Chemistry	110	250	127%	140	27%
Physics	150	280	87%	180	20%
Other Physical Sciences	130	280	115%	170	31%
Mathematical Sciences	180	360	100%	240	33%
Computer Science	330	620	88%	410	24%
Engineering	590	1,060	80%	730	24%
Social Policy	720	1,370	90%	900	25%
Law	180	360	100%	240	33%
Business	450	810	80%	540	20%
Languages	390	760	95%	470	21%
Humanities	310	630	103%	390	26%
Creative Arts	410	760	85%	510	24%
Education	450	790	76%	540	20%
Unknown	560	1,150	105%	750	34%
Total	6,100	11,740	92%	7,630	25%

Notes: Pop D*

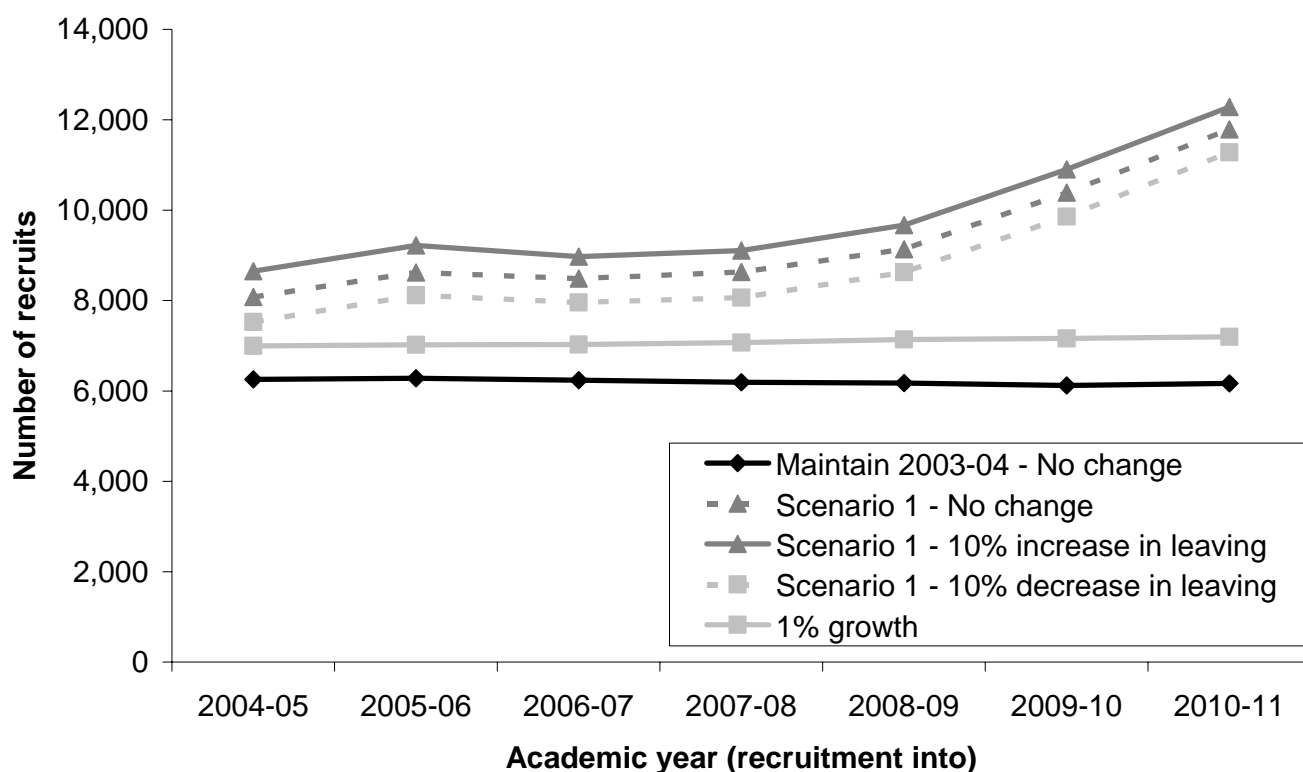
69. Figure 17 shows the number of recruits needed to meet planned expansion in student numbers up to 2007-08 and to meet illustrative rates of student number expansion until 2010-11, using 2003-04 staffing levels as the base. It provides results for five different assumptions:

- no change in leaving rates for all staff, based on Scenario 1 given above
- 10 per cent increase in leaving rates, based on Scenario 1
- 10 per cent decrease in leaving rates, based on Scenario 1
- maintaining 2003-04 staffing levels
- 1 per cent year-on-year growth from 2003-04 staffing levels.

70. Figure 18 shows the equivalent to Figure 18 but using Scenario 2.

71. Table 23 shows the projected number of recruits required, by subject in 2010-11. The number of recruits required in the different cases varies depending on the subject area studied.

Figure 17 Projected number of recruits required to expand, with varying leaving rates (Scenario 1)



Notes: Pop D*

Figure 18 Projected number of recruits required to expand, with varying leaving rates (Scenario 2)

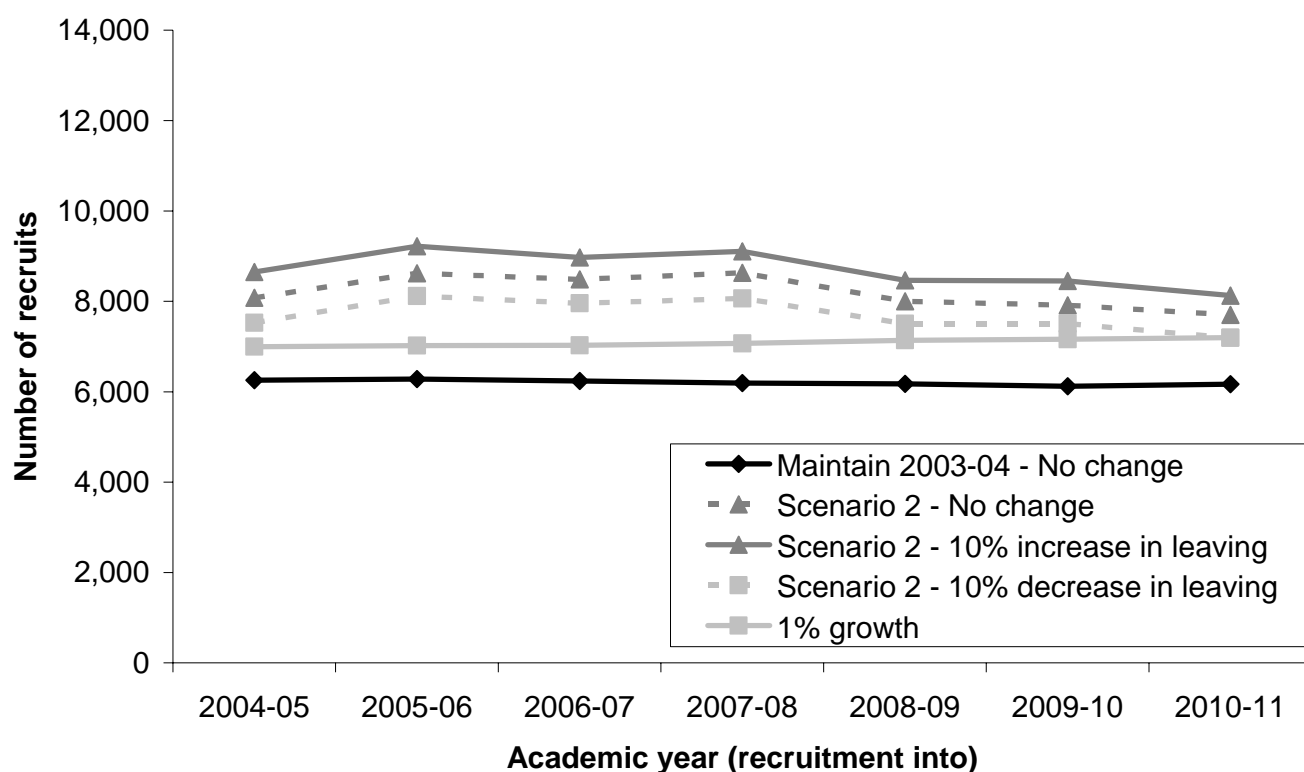


Table 23 Projected number of recruits required in 2010-11, by subject area

Subject area	Maintain current numbers	1% growth	Scenario 1			Scenario 2		
			10% increase in leaving	No change	10% decrease in leaving	10% increase in leaving	No change	10% decrease in leaving
Subjects allied to medicine	510	610	1060	990	970	700	640	600
Biological sciences	560	680	1,160	1,140	1,090	760	690	670
Veterinary sciences	70	90	140	130	130	90	90	90
Chemistry	110	140	270	250	250	150	140	140
Physics	150	170	290	280	280	190	180	160
Other physical sciences	130	160	280	280	270	190	170	160
Mathematical sciences	180	220	370	360	350	240	240	220
Computer science	330	380	650	620	590	440	410	390
Engineering	590	670	1,100	1,060	1,000	760	730	650
Social policy	720	810	1,400	1,370	1,280	930	900	810
Law	180	210	370	360	340	230	240	210
Business	450	500	860	810	770	580	540	510
Languages	390	450	780	760	730	500	470	450
Humanities	310	360	630	630	600	420	390	360
Creative arts	410	460	800	760	710	530	510	470
Education	450	500	810	790	750	570	540	500
Unknown	560	720	1210	1,150	1100	780	750	690
Total	6,100	7,130	12,180	11,740	11,210	8,060	7,630	7,080

Notes: Pop D*

Professional and support staff

Overall

72. Up to this point we have examined only academic (including academic-related) staff at English HEIs. In 2003-04, for the first time, the HESA staff record also collected information on professional and support staff. In this section we examine this group of staff in 2003-04, the only year available.

73. We consider professional and support staff by four key function areas: managers and professionals; technicians; support administrators; and other professional and support roles. Since it is possible for a staff member to have more than one function within an institution, we have taken 'primary professional/support function' to mean the function in which they spend the most time (according to FTE)¹².

74. Table 24 shows the primary professional/support function of staff with professional and support roles. Support administrators, the largest group, make up 41 per cent of all staff with professional and support roles. Only a small number also have an academic role.

Table 24 Primary professional/support function of staff in English HEIs

Primary professional/support function	Number (%)	Professional/support FTE (%)	No. with an academic role	Academic FTE
Managers and professionals (%)	33,827 22%	25,956 22%	875	459
Technicians (%)	21,464 14%	19,226 16%	659	242
Support administrators (%)	62,469 41%	49,298 41%	1,201	382
Other, e.g. caterers, maintenance (%)	35,641 23%	24,827 21%	169	67
Total (%)	153,401 100%	119,307 100%	2,904	1,150

Note: The FTE figures are obtained by summing academic contracts and summing professional/support contracts over all staff included in this table. Pop F

Attributes

Mode of working

75. Table 25 shows that the majority, 63 per cent, of the 153,000 professional and support staff work full-time. Fourteen per cent of these staff work less than the equivalent of two days a week.

¹² In cases where an equal amount of time is devoted to two or more different functions, we have chosen the primary function according to the order in which they are listed in Table 25.

Table 25 Staff with professional/support roles by mode

Primary professional/support function	Full-time	Part-time	Low activity	Total
Managers and professionals	23,237	3,856	6,734	33,827
(%)	69%	11%	20%	100%
Technicians	17,834	2,838	792	21,464
(%)	83%	13%	4%	100%
Support administrators	39,507	16,592	6,370	62,469
(%)	63%	27%	10%	100%
Other, e.g. caterers, maintenance	15,513	13,024	7,104	35,641
(%)	44%	37%	20%	100%
Total	96,091	36,310	21,000	153,401
(%)	63%	24%	14%	100%

Notes: Pop F

Contract

76. The rest of this section concentrates on professional and support staff working a minimum of 40 per cent FTE. Table 26 shows the proportion of staff within each primary function group who are on permanent contracts; this is lowest, at 75 per cent, for technicians.

Table 26 Professional and support staff by contract

Primary professional/support function	Number	% Permanent
Managers and professionals	27,093	80%
Technicians	20,672	75%
Support administrators	56,099	82%
Other, e.g. caterers, maintenance	28,537	93%
Total	132,401	83%

Note: Low activity staff excluded. Pop G

Age

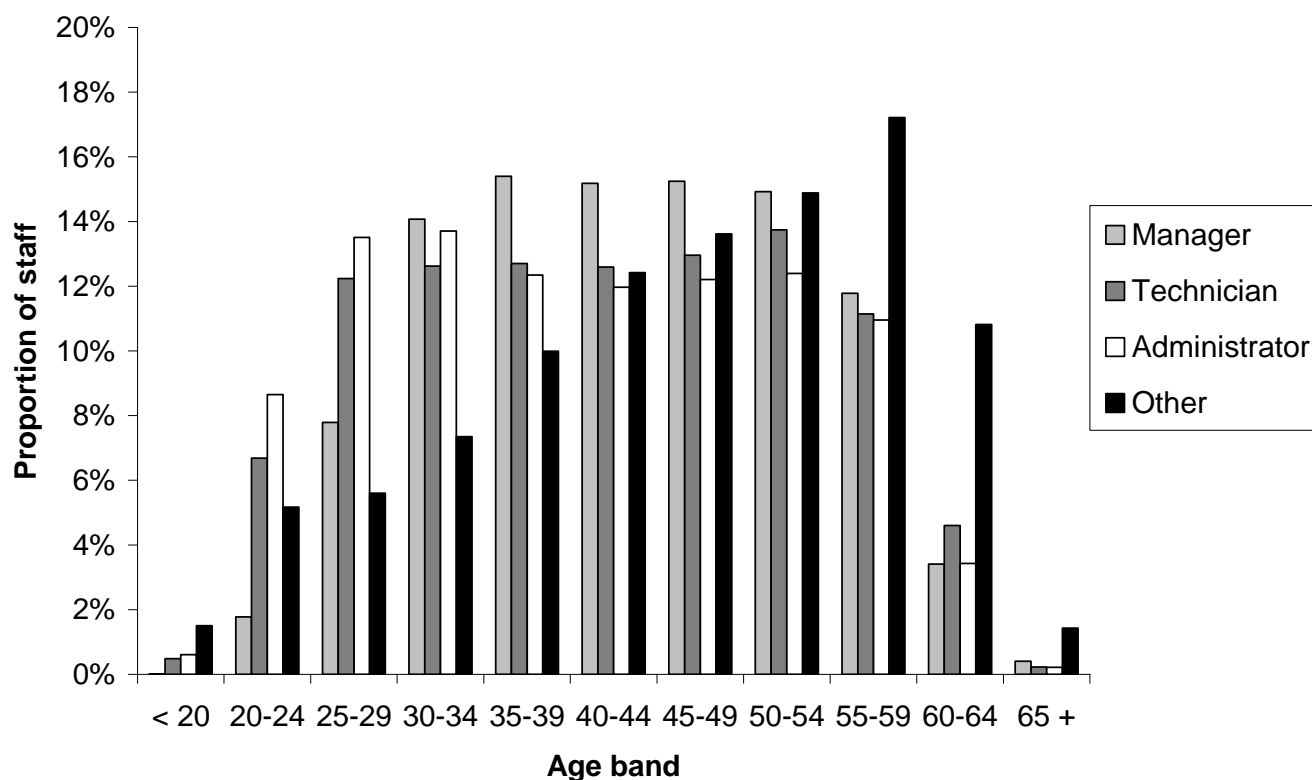
77. Table 27 and Figure 19 combined show quite different age profiles within each primary function. Staff in the category 'Other, e.g. caterers, maintenance' have the oldest age profile, with 44 per cent being 50 or over. However, Figure 19 shows that this category has the highest proportion of staff under 20. Administrators appear to have the youngest age profile, with a median age of 40 years compared to an overall Pop G median age of 43 years. Managers and professionals seem to have an even spread of ages between 30 and 55; technicians similarly are mostly between 25 and 55.

Table 27 Professional and support staff by age

Primary professional/support function	Number	Age known	Mean age (years)	Median age (years)	% 50 or over
Managers and professionals	27,093	27,079	43	43	31%
Technicians	20,672	20,658	41	42	30%
Support administrators	56,099	56,062	40	40	27%
Other, e.g. caterers, maintenance	28,537	28,497	46	47	44%
Total	132,401	132,296	42	43	32%

Note: Low activity staff excluded. Pop G

Figure 19 Age profile by primary professional/support function



Note: Low activity staff excluded. Staff with unknown age excluded. Pop G

Sex

78. Table 28 shows that the majority of professional and support staff, overall, are female. 'Managers and professionals', and the 'Other' category, are relatively balanced with regard to sex, whereas technicians appear male-dominated (33 per cent female) and administrators, female-dominated (83 per cent female).

Table 28 Professional and support staff by sex

Primary professional/support function	Total	% Female
Managers and professionals	27,093	52%
Technicians	20,672	33%
Support administrators	56,099	83%
Other, e.g. caterers, maintenance	28,537	50%
Total	132,401	62%

Note: Low activity staff excluded. Pop G

Ethnicity

79. Table 29 shows that 8 per cent of professional and support staff are from a minority ethnic background. Technicians and 'Other' are the groups with the highest proportion of non-white staff, each at 9 per cent.

Table 29 Professional and support staff by ethnicity

Primary professional/support function	Headcount	Total known ethnicity	% White
Managers and professionals	27,093	25,486	94%
Technicians	20,672	18,324	91%
Support administrators	56,099	52,700	92%
Other, e.g. caterers, maintenance	28,537	25,029	91%
Total	132,401	121,539	92%

Note: Low activity staff excluded. Pop G

Projections

80. As information on the professional and support staff has only been available for 2003-04, there is no opportunity to develop a similar projection model to the one for academic staff. In addition, there is no robust information on the recruitment and leaving levels for this set of staff.

81. We can however examine how many more staff would be required if the ratio of professional and support staff was kept in line with the academic staff, based on planned expansion in student numbers up to 2007-08 (as outlined in the grant letter) and to meet illustrative rates of student number expansion until 2010-11. Table 25 shows that there are 33,827 managers, 21,464 technicians, 62,469 support administrators and 35,641 other staff such as caterers and maintenance. Applying the year-on-year changes given in Table 21, we can infer how much each of these groups would increase in terms of headcount.

82. Table 30 shows the additional staff required compared with 2003-04 levels, to remain in line with Scenario 1 from paragraph 65. It shows that by 2010-11, around 30,000 more professional and support staff would be required in comparison with 2003-04 levels.

Table 30 Additional headcount of professional and support staff to keep in line with Scenario 1

Primary function	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2010-11
Managers and professionals	0	870	1,940	2,880	3,810	4,960	6,660
Technicians	0	550	1,230	1,820	2,410	3,150	4,230
Support administrators	0	1,600	3,590	5,320	7,030	9,170	12,310
Other, e.g. caterers, maintenance	0	910	2,050	3,030	4,010	5,230	7,020
Total	0	3,930	8,810	13,050	17,260	22,510	30,220

Table 31 shows the equivalent table based upon Scenario 2 from paragraph 65.

Table 31 Additional headcount of professional and support staff to keep in line with Scenario 2

Primary function	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2010-11
Managers and professionals	0	870	1,940	2,880	3,810	4,420	4,940
Technicians	0	550	1,230	1,820	2,410	2,800	3,130
Support administrators	0	1,600	3,590	5,320	7,030	8,170	9,130
Other, e.g. caterers, maintenance	0	910	2,050	3,030	4,010	4,660	5,200
Total	0	3,930	8,810	13,050	17,260	20,050	22,400

PhD starters and qualifiers

Introduction

83. This section looks at PhD starters and qualifiers in HEIs across the UK, as they represent a potential source of recruitment for academic staff.

84. The population of PhD starters we use is derived using data from two years either side of the time of starting the course¹³, and therefore we only have full data for the years 1997-98 to 2001-02¹⁴. The population of PhD qualifiers is available from 1995-96 to 2003-04. Details and data definitions are at Annex A.

PhD starters

85. There was a 7 per cent growth in the numbers of PhD starters between 1997-98 and 2001-02 (see Table 32). Most of this growth can be attributed to an increase in numbers of overseas domiciled students commencing PhDs in English HEIs; the number of home domiciled¹⁵ students has remained approximately stable at around 12,000.

Table 32 Numbers of home domiciled PhD starters, 1997-98 to 2001-02

Academic year	Number of PhD starters	Home domiciled	% Home domiciled
1997-98	18,148	11,745	65%
1998-99	18,167	11,369	63%
1999-2000	18,868	11,718	62%
2000-01	19,552	12,026	62%
2001-02	19,544	11,741	60%

Notes: Pop H

86. Table 33 shows that the subject areas with the largest numbers of PhD starters in 2001-02 were biological sciences (16 per cent) and medicine and dentistry (11 per cent). Law and veterinary sciences have the smallest, at 1 per cent and 2 per cent respectively. 'Medicine and dentistry', and 'computer science/librarianship/information science' have experienced the most growth in numbers of PhD starters, while numbers in languages, chemistry and 'engineering/technology/building/architecture' have each declined by over 10 per cent.

¹³ For example for those starting on a MPhil course in 2001-02, we need to examine the 2002-03 and 2003-04 data to establish whether they were true MPhil students or PhD students initially registered on a PhD course.

¹⁴ Further analysis of home and overseas domiciled research students can be found at <http://www.hepi.ac.uk/pubdetail.asp?ID=172&DOC=Reports>

¹⁵ Students living in England, Scotland, Wales, Northern Ireland, the Channel Islands or the Isle of Man.

Table 33 Home domiciled PhD starters by subject area, 1997-98 and 2001-02

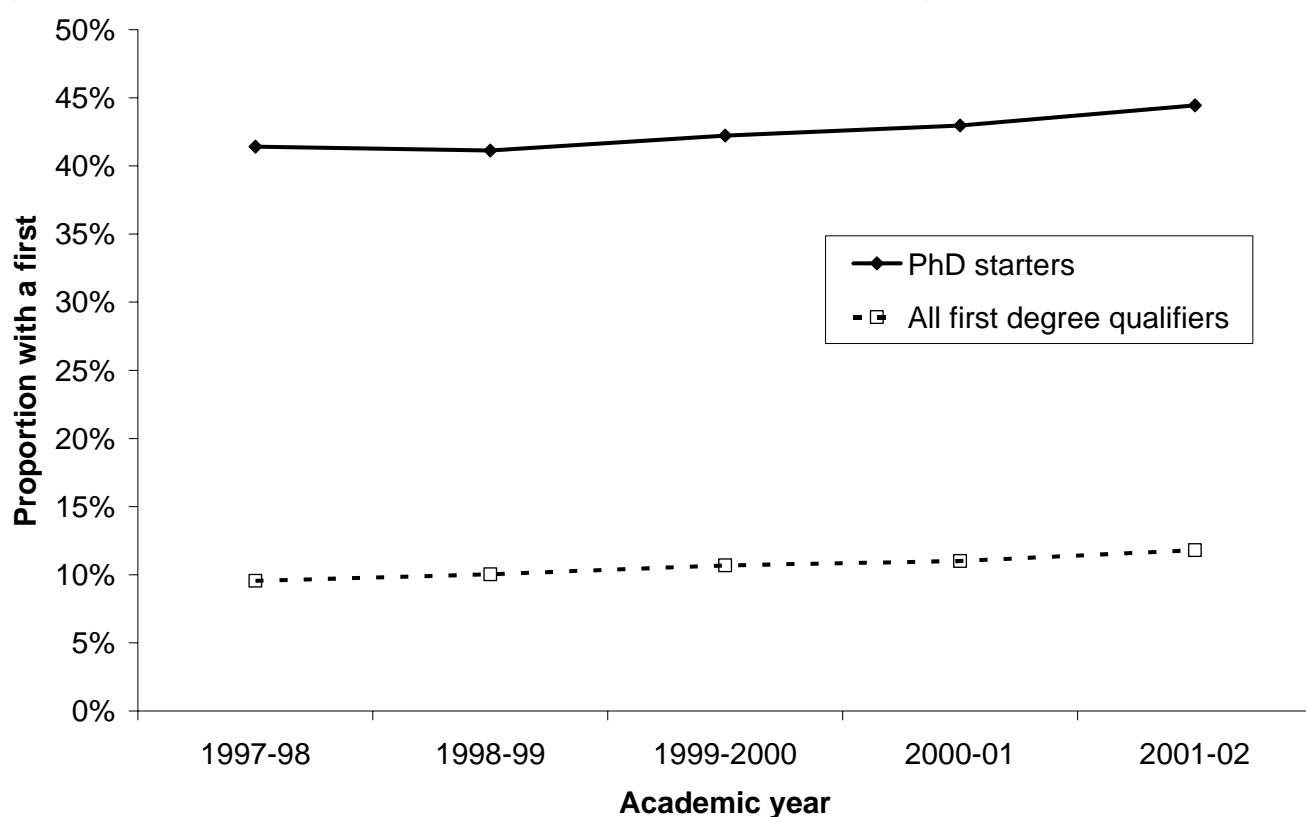
Subject	1997-98		2001-02		% Growth (1997 to 2001)
	Number	%	Number	%	
Medicine and dentistry	1,004	9%	1,275	11%	27%
Subjects allied to medicine	640	5%	722	6%	13%
Biological sciences	1,995	17%	1,873	16%	-6%
Veterinary sciences/agriculture and related	206	2%	207	2%	0%
Chemistry	909	8%	789	7%	-13%
Physics	466	4%	475	4%	2%
Other physical sciences	491	4%	458	4%	-7%
Mathematical sciences	265	2%	300	3%	13%
Computer science/librarianship/info science	384	3%	482	4%	26%
Engineering/technology/building/architecture	1,420	12%	1,229	10%	-13%
Social/political/economic studies	871	7%	849	7%	-3%
Law	112	1%	111	1%	-1%
Business/administrative studies	394	3%	449	4%	14%
Languages	709	6%	607	5%	-14%
Humanities	796	7%	747	6%	-6%
Creative arts/design	246	2%	305	3%	24%
Education	581	5%	593	5%	2%
Unknown and combined subjects	256	2%	270	2%	5%
Total	11,745	100%	11,741	100%	0%

Notes: Pop H

87. The previous report mentions that around 42 per cent of UK domiciled PhD starters have a first class degree (where the degree qualification was received in the two years prior to starting a PhD, and class of degree is known)¹⁶, and suggested this as a proxy for 'quality' of PhD students. Figure 20 shows that the proportion of PhD starters with a first class degree rose from around 41 to 44 per cent between 1998-98 and 2001-02. The (weighted) proportion of all degree students who qualified with a first also went up in that time period, from 10 per cent to 12 per cent.

¹⁶ HEFCE 2002/43, page 28, paragraph 2; and page 3, paragraph 16

Figure 20 Proportion of UK domiciled PhD starters with a first class degree



Note: Includes students who qualified with a degree in the two years prior to starting a PhD. Excludes those for whom class of degree is not known. The proportion of first degree qualifiers with a first is weighted by subject area and year of degree qualification of PhD starters. Pop H

PhD qualifiers

88. From Table 34 we see that the number of home domiciled PhD qualifiers in English HEIs rose between 1995-96 and 1998-99 but levelled out at around 9,000 between 1998-99 and 2002-03, after which it began to rise again.

Table 34 Numbers of home domiciled PhD qualifiers, 1995-96 to 2003-04

Academic year	Number of PhD qualifiers	Home domiciled	% Home domiciled
1995-96	10,886	7,109	65%
1996-97	11,878	7,766	65%
1997-98	12,682	8,229	65%
1998-99	13,227	8,775	66%
1999-2000	13,739	9,059	66%
2000-01	13,899	8,924	64%
2001-02	14,050	8,949	64%
2002-03	14,667	8,997	61%
2003-04	15,049	9,413	63%

Notes: Pop I

89. Table 35 shows that the numbers of students qualifying with a PhD in Creative arts/design have increased by almost 200 per cent from 1995-96 to 2003-04. Numbers of qualifiers from Education and Medicine and dentistry have also experienced high growth, at 134 per cent and 95 per cent respectively. The largest decreases in the number of qualifiers was found in Physics and 'Veterinary sciences/agriculture and related', with drops of 15 per cent and 12 per cent respectively.

Table 35 Home domiciled PhD qualifiers by subject, 1995-96 and 2003-04

Subject	1995-96		2003-04		% Growth (1995 to 2003)
	Number	%	Number	%	
Medicine and dentistry	639	9%	1,243	13%	95%
Subjects allied to medicine	369	5%	629	7%	70%
Biological sciences	1,225	17%	1,730	18%	41%
Veterinary sciences/agriculture and related	190	3%	167	2%	-12%
Chemistry	785	11%	742	8%	-5%
Physics	465	7%	394	4%	-15%
Other physical sciences	374	5%	448	5%	20%
Mathematical sciences	226	3%	221	2%	-2%
Computer science/librarianship/info science	200	3%	275	3%	38%
Engineering/technology/building/architecture	920	13%	945	10%	3%
Social/political/economic studies	340	5%	634	7%	86%
Law	42	1%	76	1%	81%
Business/administrative studies	219	3%	244	3%	11%
Languages	334	5%	481	5%	44%
Humanities	385	5%	511	5%	33%
Creative arts/design	53	1%	158	2%	198%
Education	149	2%	349	4%	134%
Unknown and combined subjects	194	3%	166	2%	-14%
Total	7,109	100%	9,413	100%	32%

Notes: Pop I

Research assistants

Overall

90. We now consider staff that are below lecturer grades, are involved in research but are not eligible for submission to the 2001 RAE, to whom we refer as 'research assistants'. This group is of particular policy interest, both because of the contribution to research output, and because it is an important pathway from student to academic, that is academic at lecturer grade and above.

91. Table 36 shows that most assistant academics are research assistants (78 per cent). Those in the 'Other' category include a small number of research active staff who, though formally on a grade below lecturer, are principal investigators and are eligible for submission to the RAE. Most are staff only involved in teaching.

Table 36 Research assistants (excluding low activity) and other assistant academics, 2002-03 and 2003-04

	2002-03		2003-04	
	Number	FTE	Number	FTE
Research assistants	21,521	18,999	22,457	19,850
Other assistant academics	7,234	5,805	6,499	5,290
All assistant academics	28,755	24,803	28,956	25,139

Note: The FTE figures given are obtained by summing academic contracts over all staff included in this table.

92. In the population we consider in Table 36, we exclude a small number of low activity staff with all the attributes of research assistants, which form part of the low activity population in Table 5. The full population of research assistants is shown in Table 37.

Table 37 All research assistants (including low activity), 2002-03 to 2003-04

	2002-03		2003-04	
	Number	FTE	Number	FTE
Research assistants (normal activity levels)	21,521	18,999	22,457	19,850
Research assistants (low activity)	572	153	473	150
All research assistants	22,093	19,152	22,930	20,000

Note: The FTE figures given are obtained by summing academic contracts over all staff included in this table. Pop E

93. Table 38 shows that almost all (96 per cent) research assistants were on non-permanent contracts in 2002-03. We are particularly interested in whether this is affected by certain characteristics of the staff, and in whether any of these non-permanent assistants go on to permanent contracts in the following year.

Table 38 Research assistants by contract, 2002-03

Contract	Total	%
Permanent	829	4%
Non-permanent	21,264	96%
Total	22,093	100%

Notes: Pop E

Characteristics of research assistants

94. Table 39 shows that there is a comparatively small number of part-time research assistants, but that a slightly higher proportion (5 per cent compared with 4 per cent) of them are permanent compared with their full-time counterparts.

Table 39 Research assistants by mode, 2002-03

Mode	Permanent	Non-permanent	Total	% Permanent
Full-time	701	18,573	19,274	4%
Part-time	128	2,691	2,819	5%
Total	829	21,264	22,093	4%

Notes: Pop E

95. Males make up over half of the research assistants, as Table 40 demonstrates. The proportion on permanent contracts is the same for men and women.

Table 40 Research assistants by sex, 2002-03

Sex	Permanent	Non-permanent	Total	% Permanent
Male	469	11,557	12,026	4%
Female	360	9,707	10,067	4%
Total	829	21,264	22,093	4%

Notes: Pop E

96. Table 41 shows that Biological sciences has the largest numbers of assistant researchers, with over 6,500. There are less than 100 assistant researchers for Law, 10 of whom are on permanent contracts, making it the subject area with the highest proportion of permanent assistants. Medicine and dentistry has the smallest proportion (2 per cent) of permanent assistants.

Table 41 Research assistants by subject, 2002-03

Subject	Permanent	Non-permanent	Total	% Permanent
Medicine and dentistry	11	662	673	2%
Subjects allied to medicine	60	1,928	1,988	3%
Biological sciences	181	6,444	6,625	3%
Veterinary sciences/agriculture and related	9	219	228	4%
Chemistry	58	1,530	1,588	4%
Physics	54	1,505	1,559	3%
Other physical sciences	46	623	669	7%
Mathematical sciences	18	631	649	3%
Computer science/librarianship/info science	37	926	963	4%
Engineering/technology/building/architecture	96	2,292	2,388	4%
Social, economic & political studies	86	1,379	1,465	6%
Law	10	85	95	11%
Business and administrative studies	26	302	328	8%
Languages	12	313	325	4%
Humanities	22	541	563	4%
Creative arts and design	11	170	181	6%
Education	20	242	262	8%
Combined and unknown	72	1,472	1,544	5%
Total	829	21,264	22,093	4%

Notes: Pop E

Progression of temporary research assistants

97. We used individual staff identifiers to track¹⁷ the activity over time of temporary staff members within institutions. Activity is defined in Annex A. Table 42 shows that 3 per cent of non-permanent research assistants from 2002-03 moved to permanent contracts within the same institution by 2003-04. The equivalent statistic for 2001-02 to 2002-03 is 2 per cent.

¹⁷ Tracking is only within institution and across institutional transfers are not accounted for.

Table 42 Progression of non-permanent research assistants, 2002-03

Contract in following year	Total	%
Permanent	550	3%
Non-permanent	14,750	69%
None	5,964	28%
Total	21,264	100%

Note: This table refers to movement within institutions, not across the sector. Non-permanent, Pop E

98. Table 43 shows that the proportion moving onto permanent contracts is the same for both full-time and part-time staff.

Table 43 Proportion moving to a permanent contract in the following year, by mode

Mode	Number	% Moving to permanent contract
Full-time	18,573	3%
Part-time and other	2,691	3%
Total	21,264	3%

Note: This table refers to movement within institutions, not across the sector. Non-permanent, Pop E

99. Table 44 shows that a slightly lower proportion of female research assistants progress to a permanent contract than do their male counterparts (of whom 3 per cent progress).

Table 44 Proportion moving to a permanent contract in the following year, by sex

Sex	Number	% Moving to permanent contract
Male	11,557	3%
Female	9,707	2%
Total	21,264	3%

Note: This table refers to movement within institutions, not across the sector. Non-permanent, Pop E

100. Table 45 shows that the highest rate of progression to permanent contracts is in Education (7 per cent), with Business and administrative studies and Law also having a comparatively high rate at 6 per cent. Only 1 per cent of temporary research assistants in Medicine and dentistry move on to a permanent contract.

Table 45 Proportion moving to a permanent contract in the following year, by subject

Subject	Number	% Moving to permanent contract
Medicine and dentistry	662	1%
Subjects allied to medicine	1,928	2%
Biological sciences	6,444	2%
Veterinary sciences/agriculture and related	219	3%
Chemistry	1,530	2%
Physics	1,505	2%
Other physical sciences	623	4%
Mathematical sciences	631	3%
Computer science/librarianship/info science	926	4%
Engineering/technology/building/architecture	2,292	4%
Social, economic & political studies	1,379	5%
Law	85	6%
Business/administrative studies	302	6%
Languages	313	2%
Humanities	541	4%
Creative arts/design	170	5%
Education	242	7%
Unknown and combined subjects	1,472	3%
Total	21,264	3%

Note: This table refers to movement within institutions, not across the sector. Non-permanent, Pop E

Guide to annexes

101. **Annex A: Population criteria and data definitions.** This explains the population criteria for the populations used throughout the report.

102. **Annex B: Testing the previous report's projection model.** This looks at the results given by report 2002/43, and at the relation between the actual and predicted populations for 2003-04.

103. **Annex C: Tables and figures for HEIs across the UK** (Excel spreadsheet). This contains, for the following sections, the equivalent information for UK HEIs to that shown in the report for English HEIs (note that, for convenient reference, we have numbered the tables in the same way):

- overview
- academic and assistant academic staff
- professional and support staff.

104. **Annex D: Additional tables and figures for English HEIs** (Excel spreadsheet). This is broken into the following sections:

- full time-series data for tables in 'Academic and assistant academic staff'
- tables and figures relating to non-permanent academic staff
- age and nationality profiles of key subject areas.

105. **Annex E: Additional tables and figures for HEIs across the UK** (Excel spreadsheet). This is the UK equivalent of Annex D.

106. In Annexes C, D and E each section begins with a worksheet outlining the tables and figures presented. The worksheet tabs give the table/figure number as well as information regarding the contents, including the population shown, where relevant. These annexes are available with the rest of this report on the HEFCE web-site, www.hefce.ac.uk, under Publications.

Annex A

Population criteria and data definitions

All staff found in the HESA record

1. The HESA new individualised staff record (see paragraph 11 of main text) contains data about every typical contract held by a member of staff in a UK HEI. For this study we collected the HESA data for individual members of staff and applied the following approach:
 - a. Exclude contracts with an FTE of zero.
 - b. The total FTE was found for each staff member by summing the FTEs for each contract held.
 - c. Academic and professional/support FTE was identified and separated using the HESA activity fields ACT1, ACT2 and ACT3 (entry '2A' in any of these fields indicates academic activity).
 - d. The total FTE was set to a maximum of 100 per cent, prioritising academic over professional/support FTE.
 - e. To reduce the records down to one per staff member, the 'best' contract record was taken, favouring permanent contracts and full-time modes, and then higher grades and research posts (where appropriate). This is equivalent to the methods used in HEFCE 2002/43.
 - f. Staff with no active contract on 1 December {Year} are excluded.
2. We refer to the data achieved as a result of this as the census date population. All of the staff populations looked at in the report are divisions or refinements of the census date population.

Pop A: All staff in English HEIs

3. Pop A is made up of those in the census date population who are employed by English HEIs.

Data definitions for all staff in English HEIs

4. Staff roles are identified using information from all the contracts held by an individual in academic year X. Two key groups are identified using HESA fields ACT1, ACT2 and ACT3:
 - a. Staff with academic roles: ACT1, ACT2 or ACT3 = '2A' (academic professionals).
 - b. Staff with professional/support roles (that is, roles other than academic): ACT1, ACT2, or ACT3 = '1', '2B', '3A', '3B', '3C', '4A', '4B', '5', '6', '7', '8', or '9'.
5. Note that staff may hold any number of different roles, and may therefore be included in both categories.

All staff with academic roles

Pop B: Staff with academic roles

6. The population of 'Staff with academic roles' includes any in Pop A who have an academic role as defined in paragraph 4a.

Pop C: Academic and assistant academic staff

7. The population of 'Academics and assistant academic staff' is derived from Pop B in the following way:

- a. Staff with no active academic contract on 1 December {Year} are excluded.
- b. All 'very low activity contracts' are excluded: This refers to any which are less than 25 per cent academic FTE, either within a full year or the full length of the contract. This is done to make data for 2003-04 comparable with previous HESA records.
- c. All 'low activity staff' are excluded: This refers to staff members with a total academic FTE of less than 40 per cent.
- d. All staff in medicine and dentistry are excluded, since some of these have contracts with the NHS rather than with an HEI. This makes it difficult to obtain a reliable time series.

Pop D: Permanent academic staff

8. The population of 'Permanent academic staff' consists of 'academics' (grades lecturer and above) with permanent contracts, as defined in HEFCE 2002/43.

Data definitions for staff with academic roles

9. Type of contract, grade, mode of working, research association, ethnicity, age, sex and subject are derived from the HESA individualised staff record by the same methods as HEFCE 2002/43.

10. Type of institution is derived from the HESA field HESAINST and from research grant information. Scottish, Welsh and Northern Irish institutions are grouped together; English institutions are first split into 'universities' and 'specialist HEIs and general colleges'. Then the universities are ordered by size of research grant; the top half are grouped as 'research orientated', the bottom as 'non-research orientated'.

11. Nationality is derived from the HESA field NATION as follows:

The UK	
2826	United Kingdom

Australia, New Zealand, the USA and Canada			
1609	Australia	1714	New Zealand
1626	Canada	1771	USA

Western Europe and Scandinavia			
1605	Andorra	1827	Liechtenstein
1610	Austria	1693	Luxembourg
1614	Belgium	1700	Malta
1641	Denmark	1825	Monaco
1657	East Germany	1710	Netherlands
1651	Finland	1718	Norway
1653	France	1728	Portugal
1656	Germany	1826	San Marino
1659	Gibraltar	1751	Spain
1676	Ireland	1755	Sweden
1678	Italy	1756	Switzerland

China, Japan and East Asia			
1620	Brunei	1704	Mongolia
1622	Burma	1684	North Korea
1624	Cambodia	1726	Philippines
1631	China	1756	Singapore
1669	Hong Kong	1685	South Korea
1673	Indonesia	1628	Sri Lanka
1681	Japan	1652	Taiwan
1681	Laos	1760	Thailand
1698	Malaysia	1774	Vietnam

Eastern and Central Europe			
1603	Albania	1832	Latvia
1836	Armenia	1833	Lithuania
1838	Belarus	1851	Macedonia
1853	Bosnia	1841	Moldova
1621	Bulgaria	1727	Poland
1772	CIS	1733	Romania
1834	Croatia	1842	Russia
1639	Czech Republic	1780	Serbia
1831	Estonia	1850	Slovakia
1847	Georgia	1835	Slovenia
1661	Greece	1845	Ukraine
1670	Hungary		

Middle East and Central Asia			
1602	Afghanistan	1686	Kuwait
1616	Bhutan	1688	Lebanon
1638	Cyprus	1709	Nepal
1787	East Pakistan	1721	Pakistan
1768	Egypt	1731	Qatar
1672	India	1743	Saudi Arabia
1674	Iran	1757	Syria
1675	Iraq	1766	Turkey
1677	Israel	1746	UAE
1682	Jordan	1779	Yemen

12. Other nationalities are grouped as 'Other non-European'.

13. Salary is derived from the HESA fields SALREF and SALPOINT.

All staff with professional/support roles

Pop F: Staff with professional/support roles

14. The population of 'Staff with professional/support roles' includes any in Pop A who have a professional/support role as defined in paragraph 4b.

Pop G: professional and support staff

15. The population of 'Professional and support staff' includes those staff from Pop F with a total professional/support FTE of at least 40 per cent.

Data definitions for staff with professional/support roles

16. 'Primary professional/support function' was derived in the following way:

- a. Four function groups were identified, and staff contracts assigned to one or more:
 - i. Managers and professionals: if any of ACT1, ACT2, ACT3 have entries '1' or '2B'.
 - ii. Technicians: if any of ACT1, ACT2, ACT3 have entry '3A'.
 - iii. Support administrators: if any of ACT1, ACT2, ACT3 have entries '3B', '3C', '4A', or '4B'.
 - iv. Other, for example caterers, maintenance: if any of ACT1, ACT2, ACT3 have entries '5', '6', '7', '8', '9'.
- b. 'Primary professional/support function' was then identified for individual staff members as that to which they devoted the most FTE. Where two or more functions had equal FTE, 'primary professional/support function' was defined to be the 'highest' function according to the above ordered list.

17. Mode, contract, age and sex are derived for professional and support staff in the same way as for academic staff.

PhD qualifiers and starters

Population of 'PhD starters'

18. The 'Population of PhD starters' was made up of students on the HESA individualised student record who fitted the following criteria:

- a. On a research-based doctorate course:
 - QUALAIM = '02' (Doctorate degree mainly by research)
 - QUALAIM = '04' (Masters degree mainly by research) and progressing to a research-based doctorate within two years (QUALAIM '02'). This is ascertained by linking datasets across years.
- b. Commenced course within the academic year:
 - COMDATE between 1 August {Year} and 31 July {year+1}
- c. Not active on a doctorate or masters degree (mainly by research) in the previous academic year (in order to ensure we have a true entrant population):
 - To check this we linked the dataset with the HESA record for the previous year. If the student was returned to the same institution in the previous year, and had an entry of '02' or '04' in the QUALAIM field (see above) then the student was removed from the population.

Population of 'PhD qualifiers'

19. PhD qualifiers were identified from the HESA individualised student record using HESA fields QUAL1 and QUAL2 (qualifications received). Students were included in the population if either QUAL1 or QUAL2 had one of the following entries:

- 01 (Postdoctorate – not used after 1995)
- 02 (Doctorate degree mainly by research).

Data definitions for PhD starters and qualifiers

20. Domicile is derived from the HESA field DOMICILE as follows:

- a. Domicile = 'Home domiciled' if DOMICILE = 2826 (UK excluding the Channel Islands and the Isle of Man), 3826 (Channel Islands), 4826 (Isle of Man), 5826 (England), 6826 (Wales) 7826 (Scotland), 8826 (Northern Ireland).
- b. Domicile = 'Overseas' for all other entries.

21. 'Subject' is derived from HESA fields SBJQA1, SBJQA2 and SBJQA3.

22. 'Class of degree' is found by linking the dataset of PhD starters with the HESA records for the previous two years. If either or both record the student as having qualified from a first degree in that year (HESA fields QUAL1 or QUAL2 between codes 18 and 24) then class of degree is derived from the HESA field CLASS (CLASS = '01' signifies a first class degree).

Research assistants

Pop E: Research assistants

23. Pop E consists of staff in Pop A for whom the following hold:

- a. Primary academic function of research: HESA field ACEMPFUN = '2'.
- b. Graded as a researcher: HESA field GRADE = '05', '06', '35', '36', '37' or '74'.
- c. Not known to be eligible for submission to the 2001 RAE: HESA field RESACT = '3' (employed by the reporting institution on 31 March 2001 but not recorded as category A, A* or C) or '9' (not employed by the reporting institution on 31 March 2001).

Data definitions for research assistants

24. Mode of working, type of contract, subject and sex are derived by the same methods as for other staff with academic roles.

25. The movement within institutions of non-permanent research assistants is derived by linking records from one year to the next, on HESA fields HESAInst (institution identifier) and StaffID (staff identification number). Where institution identifiers have changed from one year to the next, links are validated using date of birth. Non-permanent research assistants are then divided into three categories:

- a. Those progressing to permanent contracts in the following year (in the same institution).
- b. Those remaining on non-permanent contracts in the following year (in the same institution).
- c. Those with no contract in the following year (in the same institution).

Annex B

Testing the previous report's projection model

1. For our projection models we do not have any new data for leaving and recruitment patterns as in the previous report (1997-98 and 1998-99). This means that we are unable to accurately test the results of the previous report's projection modelling. However, some limited testing is possible.
2. If we assume that the previous report is correct in its profile of recruits and rates of leaving for years between 1999-2000 and 2003-04, and we adjust the level of recruits so the total numbers match what we actually find between 1999-2000 and 2003-04, we can compare the attributes of the staff from the model and as found.
3. For this testing we look at three attributes of the actual and projected staffing population:-
 - a. Age profile (proportion under 35 and proportion 50 or over).
 - b. Proportion of professors.
 - c. Proportion of women.
4. Table B1 shows the differences in the actual and projected 2003-04 population for these attributes. It shows that the difference between projections and what happened varies by subject, but in all cases the projections show a younger profile with fewer professors than actually found. For example, in engineering, the projection model underestimated the proportion of professors by 4 per cent. Also in engineering, the age profile is slightly older than expected as 5 per cent more of the population are over 50.

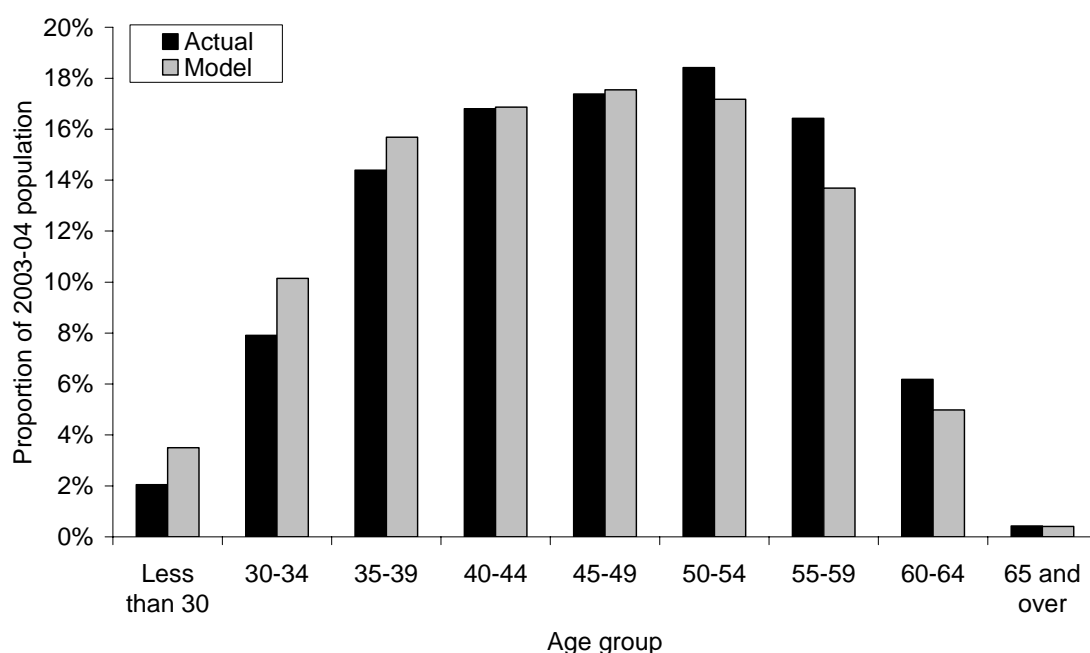
Table B1 Differences between actual and projected 2003-04 populations, by subject

Subject area	Departure (Actual - Projection) 2003-04			
	% Under 35	% 50 and over	% Female	% Professor
Subjects allied to medicine	-3%	3%	0%	3%
Biological sciences	-2%	3%	1%	4%
Business	-4%	4%	-2%	3%
Chemistry	-4%	4%	-1%	3%
Computer science	-4%	6%	-2%	1%
Creative arts	-2%	3%	1%	2%
Education	-2%	8%	4%	1%
Engineering	-5%	5%	0%	4%
Humanities	-1%	4%	0%	2%
Languages	0%	3%	0%	0%
Law	-7%	4%	-3%	4%
Mathematical sciences	-3%	4%	-1%	2%
Other physical sciences	-5%	6%	-4%	5%
Physics	-4%	7%	1%	3%
Social policy	-3%	3%	2%	2%
Veterinary sciences	-2%	4%	2%	-1%
Total	-3%	4%	0%	3%

5. The proportion of women is about right across the section even though it was expected it to come out low with the profiles of actual recruits being more female than the historic profile.

6. Figure B1 provides more details on the projected and actual sector age profile. It can be seen that the actual age profile is older than the model would expect, with larger numbers of staff in the 50-54, 55-59 and 60-64 age groups.

Figure B1 Age profile of projected and actual 2003-04 staff population



7. The most plausible explanation for these outcomes is that staff numbers have increased with lower levels of recruitment than expected through a reduction in the staff leaving rates, particularly for older and more senior staff. If true, this means we can expect to require higher recruitment levels in the future since at some stage the staff who have extended their period of service will have to leave.

8. In part, the projections given in this section take account of the past departure from the original projections because these projections start with the sector as we see it in 2003-04, including the older than originally expected profile; this, plus the increased size of the sector, leads to higher recruitment requirements than our original projections showed. If the explanation given in the previous paragraph is true, the projections should be revised. If we assume that leaving rates for older staff have reduced and promotion rates to professor have increased from those seen in 1997-98 and 1998-99, two changes to the projections are needed:

- a. A slight reduction in recruitment levels required in the early part of the period 2004-05 through 2006-07.
- b. For the later part of the period (2007-08 through to 2010-11), a steady rise in the required recruitment levels.