



OCCASIONAL PAPERS

**The demographic outlook
for Australian universities'
academic staff**

NOVEMBER 2008

Professor Graeme Hugo

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Executive summary

An analysis of the age structure of the academic staff of Australian universities demonstrates that over the next decade the universities will face their largest recruitment task for three decades. The entry of the ‘baby boomers’ into higher education, together with increased participation rates, resulted in a rapid expansion of universities in the 1960s and 1970s, when entrants to the academic workforce were typically in their 20s and 30s. Slower growth in academic numbers since then, and particularly in the past decade or so, has resulted in a rapidly ageing academic workforce with a ‘missing generation’ of younger academics—those under 40 years old, who are underrepresented in the academic workforce compared to other professions and to the workforce as a whole. The high proportion of academics who will be retiring over the next 15 years confronts the sector with a recruitment challenge.

The task of renewal will have to be addressed in the most competitive international labour market for skilled academics, scientists, technologists and researchers that has ever existed. Rather than redundancies, the policies of the next two decades will need to concentrate on three other ‘R’s’: retention, recruitment and return. Universities will need a judicious mix of strategies, which might include ‘new blood’ programs, early recognition of new talent, family friendly policies (especially for women), ‘bringing them back’ programs to repatriate former staff and students of the university, joint international exchanges in teaching and research, incentives to keep ‘high fliers’ in the university, gradual retirement programs for selected staff, and accelerated promotion for key staff.

However, the development of appropriate, effective and innovative policy interventions requires a comprehensive understanding of the supply of and demand for university staff in Australia. A more detailed knowledge base is needed. This paper provides some preliminary analyses, including of disciplinary differences, but a more fine-grained analysis will be required—involving more discipline-specific and institution-specific analysis, a detailed examination of the pipeline of PhD students and postdoctoral fellows, and a comprehensive consideration of the potential for international migration to solve the workforce challenges facing Australian universities.

The ‘crunch’ in academic retirements has not yet arrived (it is still around a decade away), but that is no cause for complacency. A considerable lead-time will be needed to put in place the policies and strategies needed to meet the looming shortfall of staff.

Chapter 1

Introduction

In 1962, Australia's leading demographer of the time, WD Borrie, wrote:

statistics are fundamental to an understanding of the present and immediate future problems of Australian universities ...

On the one hand, he pointed to the approaching tidal wave of baby boomers¹ about to enter universities; on the other, to the meagre numbers of graduates of the previous decade who were available to provide the necessary tertiary staff.

This paper argues that, over the next two decades, Australian universities face a staffing challenge similar to that at the time Borrie wrote. Once again, the baby boomers are responsible. However, whereas in the 1960s and 1970s they were entering the universities as students in unprecedented numbers, in the 2010s and 2020s they will be retiring from university staff positions. This loss will create a recruitment challenge in Australian universities beyond any they have experienced for more than three decades. This paper updates and expands earlier work (Hugo 2005abc) by analysing the current age structure of the academic staff of Australian universities. It then discusses some of the implications of this changing demography and puts forward a number of recommendations.

Australia is not alone in facing a challenge to university staffing. A recent study sponsored by the Association of Commonwealth Universities (Kubler and DeLuca 2006) surveyed 123 institutions in 27 countries and found that recruitment was already significantly or moderately difficult for 56% of universities. Universities in North America, Australia and New Zealand indicated that they were experiencing increasing problems in recruiting and retaining staff.

A report by Universities UK (2007) entitled *Talent wars: the international market for academic staff* found that, while the United Kingdom is not experiencing widespread staff recruitment and retention difficulties overall:

- some subject areas were experiencing difficulty
- the proportion of full-time academic staff aged over 55 had risen from 10.8% to 17.1% between 1995–96 and 2005–06
- the UK has increasingly been able to attract staff from other countries, so that 19.3% of all staff in 2005–06 were non-UK nationals and 27% of all academic staff appointed in that year were non-nationals.

In Ontario, Canada, a 2000 report (Smith 2000) projected that 4,500 of the 12,000 academic staff in the province would retire over the subsequent decade, creating a major challenge to find and finance quality staff. Moreover, universities in Asia are experiencing an unprecedented expansion, and are placing a heavy emphasis on attracting quality staff. Hence, Australian universities are facing the new recruitment challenge at a time when there is intense international competition for high-quality academic staff.

In the 1960s and 1970s, the pressure on Australian academic staffing was partly relieved by extraordinary efforts to recruit teaching staff from foreign nations, especially the United Kingdom. Now, however, there is much greater international competition.

¹ Australian residents who were born between 1946 and 1965 inclusive. This includes people born overseas during this period who have since migrated to Australia (ABS 2003).

Chapter 2

Some data considerations

There are two main sources of data on the Australian academic workforce. Each university maintains detailed data on its academic and general workforces and reports regularly on this to the responsible Australian Government department—until the end of 2007 the Department of Education, Science and Training (DEST), and since then the Department of Education, Employment and Workplace Relations. These data are maintained for predominantly administrative purposes and often are not maintained in a way that makes them amenable to demographic analysis. Their coverage of tenure, rank, length of service, etc. permits detailed analyses of trends, emerging issues and problems at national and individual institutional levels, but the extent to which the data have been interrogated and used to project future academic staff supply and demand has been very limited.

The second source is the occupation and industry data collected in the Australian Census of Population and Housing. The census asks detailed questions about people's occupations, which are classified in four-digit codes according to the Australian Standard Classification of Occupations (ASCO). The census also asks a question about the industry in which the respondent works, and the responses are coded according to the Australian and New Zealand Standard Industrial Classification (ANZSIC). It is not straightforward to identify university academics in either the occupation or industry classifications. Those used here were as follows:

- Industry (ANZSIC) class: 8431 Higher Education. This class consists of establishments providing university undergraduate or postgraduate teaching or research.
- Selected occupations (ASCO2). Those listed below were selected because (in totality) they would generally represent 'academic staff'. Occupations such as clerks, tradespeople, technical assistants, librarians, general administrative and managerial staff are specifically excluded.
 - 1293 Education Managers (including faculty heads)
 - 1299 Other Specialist Managers (e.g. R&D managers)
 - 2000 Professionals, not further defined (nfd)
 - 211 Natural and Physical Science Professionals
 - 212 Building and Engineering Professionals
 - 223 Computing Professionals
 - 2293 Mathematics, Statisticians and Actuaries
 - 2322 Nurse Educators and Researchers
 - 240 Education Professionals (nfd)
 - 242 University Lecturers and Tutors etc.
 - 249 Miscellaneous Education Professionals.

Chapter 3

The changing size of the Australian academic workforce

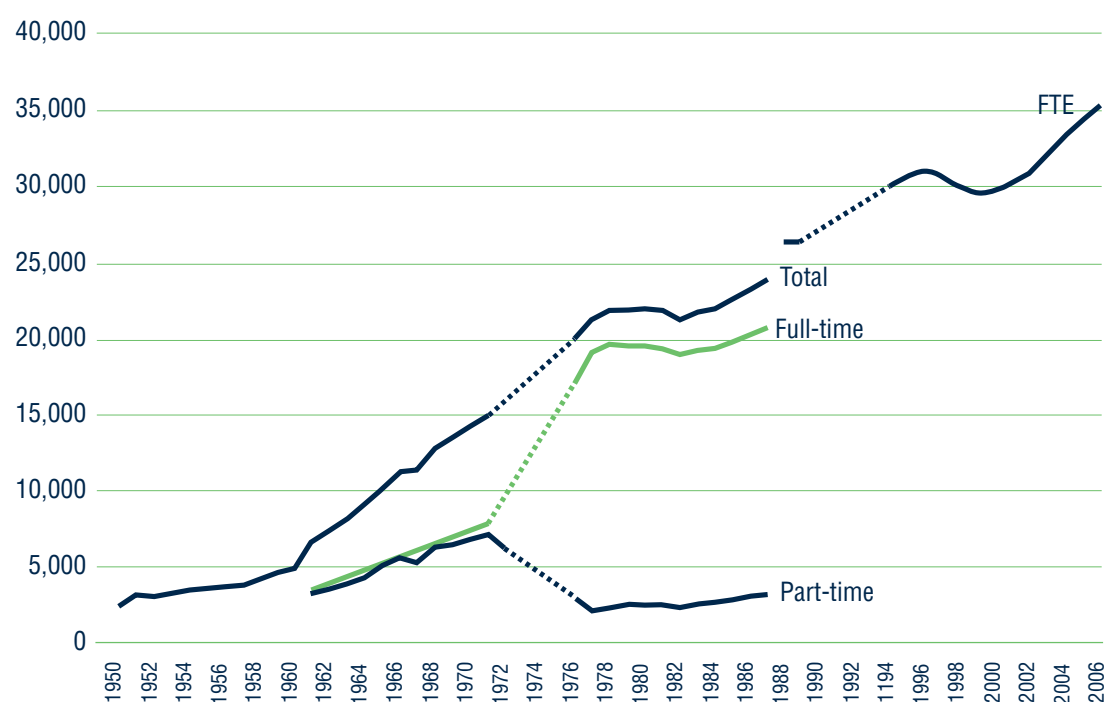
Measuring changes in the academic workforce over time is made difficult by inconsistencies in the data collection, but also by different practices in the appointment conditions and time commitment of staff in universities. Perhaps the most consistent data are those collected from universities by DEST. Although the data presented below take no account of the balance between part-time and full-time employees, Table 1 indicates the growth in the total academic workforce of Australian universities since 1991 according to the DEST data. Over the 1991–2006 period, the academic staff of Australian universities increased by 18.5%, although the increase among contract staff (29.4%) was significantly higher than among tenured staff (12.1%). Note, however, that staff numbers increased considerably faster in the early part of the period.

Table 1 Number of academic staff in Australian universities, 1991–2006

Year	Tenured		Contracted		Total	
	No.	Annual rate of change (%)	No.	Annual rate of change (%)	No.	Annual rate of change (%)
1991	18,852	–	10,982		29,834	–
1996	19,320	0.49	14,112	5.14	33,432	2.30
2001	20,271	0.97	13,209	–1.31	33,480	0.03
2006	21,138	0.84	14,210	1.47	35,348	1.09

Source: DEST, unpublished data

Figure 1 brings together annual count information on the number of academic staff in Australian tertiary education institutions over the past half-century.

Figure 1 Number of academic staff, Australia, 1950–2006

FTE = full-time equivalent

Source: ABS, *Year Book Australia*, various issues; DEST, *Staff: selected higher education statistics*, various issues

Full-time equivalent (FTE) data are available from DEST only back to 1988. Information for years before then was obtained from Australian Bureau of Statistics *Year Books* and only allowed division into full-time and part-time components. Nevertheless, the trends evident in the annual data are interesting.

In the 1950s, university staff numbers doubled from 2,388 in 1950 to 4,909 in 1960. However, by 1970 they had trebled again to 14,212, as the initial impact of the postwar baby boom and increased participation in higher education had their effect. However, through the 1960s, half the academic staff were part time, reflecting the tight labour market for academics, the intensive use of graduate students and tutors in teaching, and the use of staff employed off campus to teach part time. The 1970s saw a slower overall expansion in the number of academic staff, although it increased by 55.8%. However, the number of full-time staff increased by 166.7% from 7,367 in 1970 to 19,649 in 1980 as the tightness of the academic labour market eased and a greater proportion of university teaching was done by full-time academics.

Tracking trends in the 1980s is made a little more difficult by the development of a new basis for presenting the statistics, with the introduction of the FTE measure in 1988. Nevertheless, it is apparent that this was a period of steady but slower growth, although there was a small decline in the early 1980s when several institutions were amalgamated. By 1990, 27,570 FTE academics were employed in Australian universities, compared to 19,649 full-time and 2,485 part-time academics in 1980.

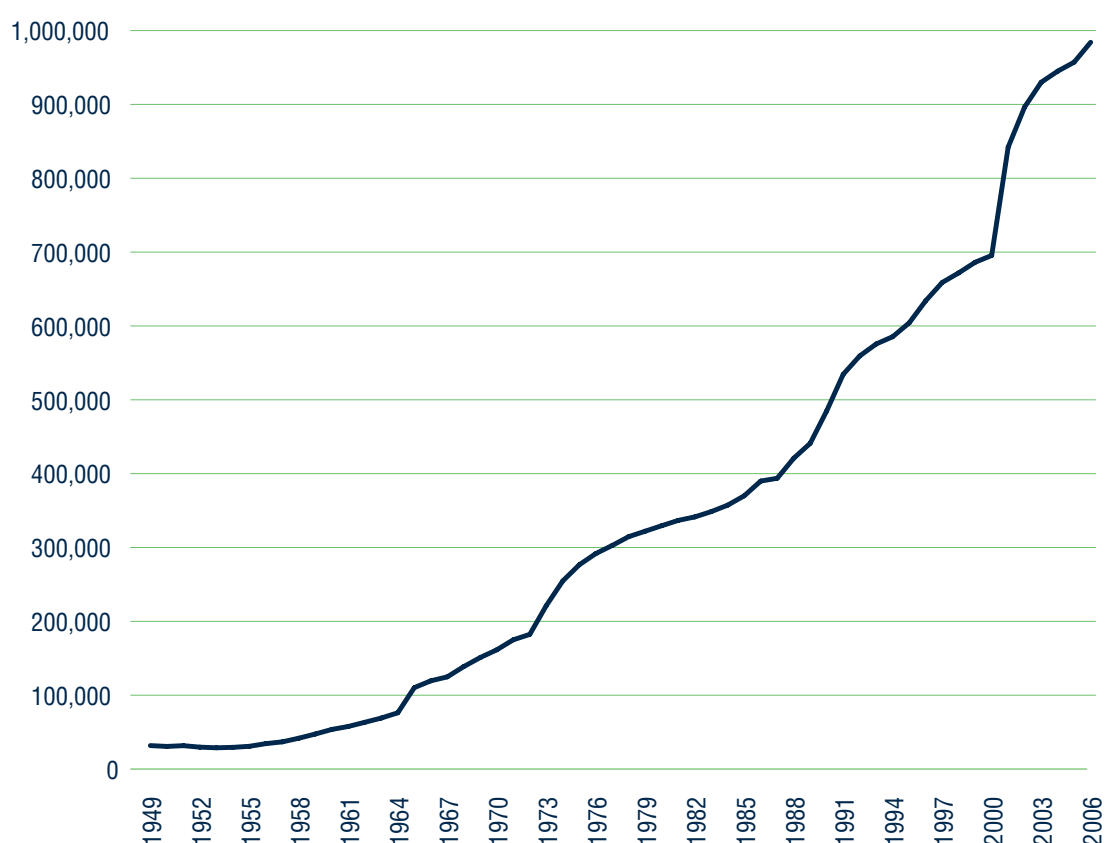
The steady growth continued in the 1990s, and by 1996 the number of FTEs had increased by 13.5% to reach 31,256. After a period of stability, FTEs fell by 4.8% to 29,748 in 1999. The following year saw a marginal increase to 29,893, but by 2002 the FTE figure, at 30,997, had still not returned to the 1996 level of staffing. However, in recent years the number of FTEs has increased by around 1,000 each year.

Table 2 Number of university academic staff, Australia, 1976–2006

Year	No.	Annual growth rate (%)
1976	13,935	–
1986	22,707	5.0
1991	29,008	5.0
1996	32,210	2.1
2001	32,217	0.0
2006	35,980	2.2

Source: ABS Australian Censuses of Population and Housing

Turning to Australian population census data, Table 2 indicates the changes that have occurred in the numbers of university academic staff. There are problems in obtaining data that are comparable over time. However, the patterns are interesting. Very rapid growth in the 1960s and early 1970s continued into the 1980s, from 13,935 in 1976 to 22,707 a decade later. This is consistent with the rapid growth in student numbers evident in Figure 2. The growth in the numbers of both students and teaching staff increased in the 1986–91 intercensal period but, while the number of students continued to grow apace, growth in the number of academic staff slowed down considerably.

Figure 2 Higher education students, Australia, 1949–2006

Source: DEST, *Students: selected higher education statistics*, various issues.

Notes: **a** Figures for 1949 to 1964 are for universities only and are based on Australian Bureau of Statistics Universities Bulletins; **b** Figures for 1965 to 1989 include universities and colleges of advanced education and are based on the statistics collected by the Commonwealth Bureau of Census and Statistics, the Commonwealth Tertiary Education Commission and the Department of Employment, Education and Training; **c** Data on colleges of advanced education for 1965 to 1973 are based on the major findings of a Department of Employment, Education, Training and Youth Affairs commissioned project; **d** Includes government teachers colleges from 1973 onwards; **e** Includes non-government teachers colleges from 1974 onwards; **f** Figures for years from 1985 to 1993 progressively include state-funded basic nursing students, who would previously have been trained in hospitals; **g** In 2001, the scope used to define the data changed to include students enrolled at any time within the 12-month period from 1 September to 31 August. Previously, published data referred to students enrolled at 31 March of the stated year.

This was a period of substantial change in the way the Australian university system operated. It saw the introduction of a managerial model of administering the universities, which coincided with an expansion of numbers of administrative staff and an emphasis on increasing the number of students taught per staff member. Indeed, Table 2 shows that, after two decades of growth, the number of university teachers failed to increase in the 1996–2001 intercensal period. On the other hand, the number of doctors increased by 8.4%, lawyers by 22.9%, and schoolteachers by 8.7%. Growth resumed in the 2001–06 period. Using DEST data on the numbers of students and staff, Table 3 indicates that there was an increase of 46.5% in the student–staff ratio between 1993 and 2003, but a levelling off since then.

Table 3 Ratio of students to academic staff, 1993–2005

Year	Students per academic staff member
1993	14.2
1994	14.2
1995	14.6
1996	15.6
1997	17.2
1998	17.9
1999	18.3
2000	18.5
2001	19.1
2002	20.2
2003	20.8
2004	20.6
2005	20.3

Source: DEST data from Australian Vice Chancellors' Committee/Universities Australia, www.avcc.edu.au/documents/publications/stats/Staff.pdf

In summary, in the 1960s and 1970s the passage of the baby boom cohorts into the university age groups, together with a substantial increase in participation rates at that time, saw a very rapid increase in the number of university academic staff (Hugo 2005abc). The staff recruited at that time were overwhelmingly young and in the early stages of their careers. Indeed, from the 1970s onwards many were early baby boomers who entered university as students in the 1960s. Moreover, the numbers of academic staff doubled between 1976 and 1991, with much of the recruiting being of baby boomers.

However, the past 15 years has seen a considerable slowdown in the growth of academic staff numbers. The baby boomers recruited in the 1970s and 1980s 'aged in place', while the numbers of Generation X recruited into academia remained small.

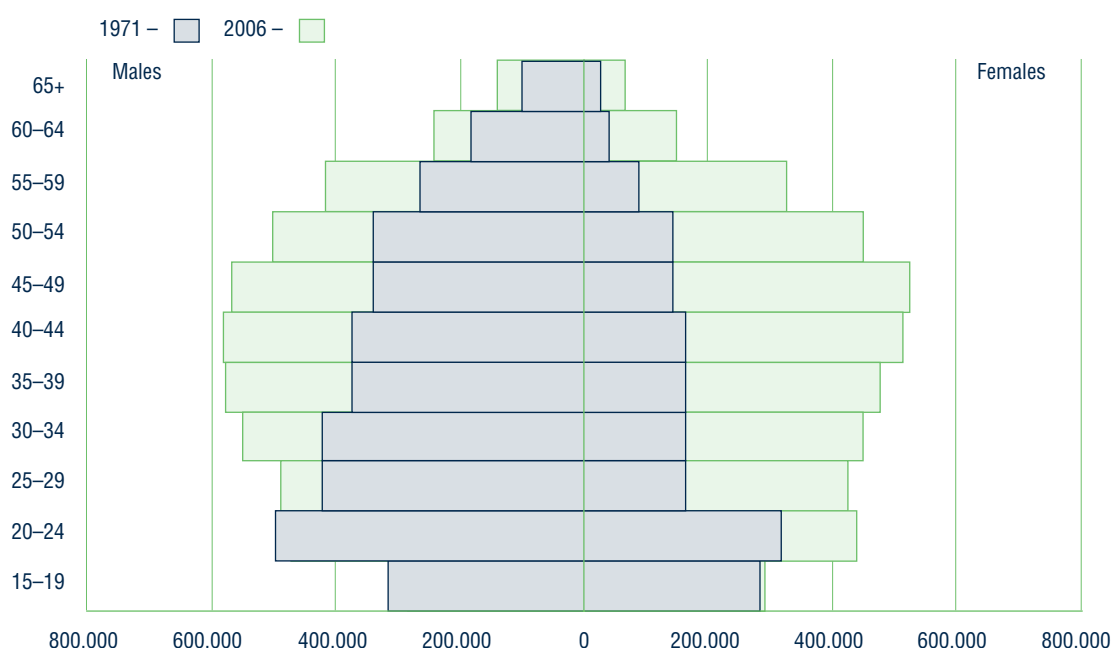
Chapter 4

Ageing of the academic workforce

Ageing of the Australian population has become an issue of substantial national significance, especially since the Australian Treasurer's *Intergenerational Report* (Department of Treasury 2002) and the Productivity Commission's 2005 Report on *Economic implications of an ageing Australia* drew attention to the closing gap in the ratio of working-age to retiree populations. Reduced fertility levels after 1961 have resulted in a progressive ageing of the national population. This has been reflected in the Australian workforce. Figure 3 overlays the age–sex structures of the national workforce in 1971 and 2006, and several major changes are evident. Most striking is the greatly increased number of women in the workforce. The total workforce grew 112.3% between 1961 and 2006, but in 1961 only 25.1% of the workforce were women whereas in 2006 women made up 46.2%.

At the end of World War II, Australia's workforce was a relatively mature one, with a median age of 37.1, but 60.3% were aged under 40 years. The postwar baby boom and high levels of immigration saw the median age of the workforce decline to 34.1 in 1981, but it then began to increase and rose to 40.0 in 2006. It will continue to increase.

Figure 3 Age–sex structure of the workforce, Australia, 1971 and 2006

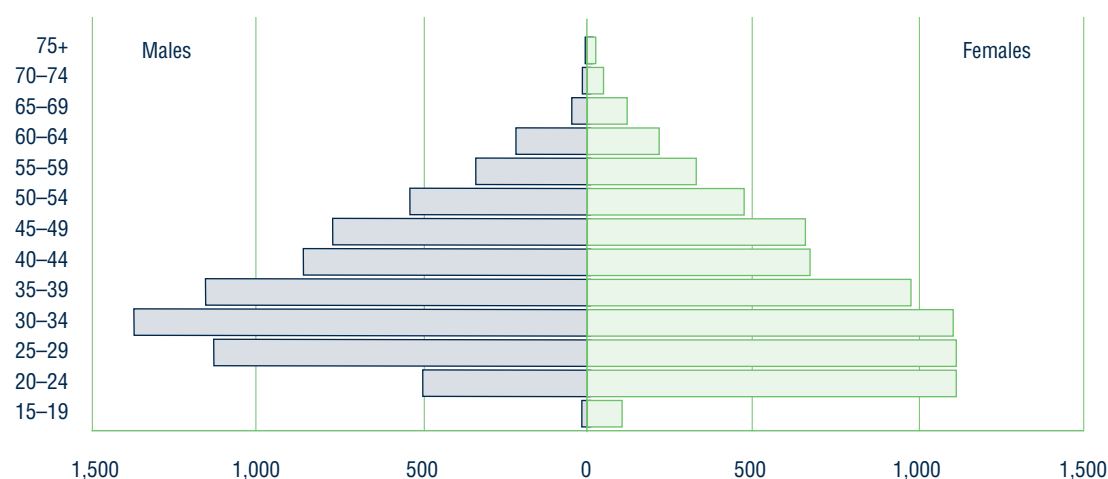


Source: ABS 1971 and 2006 censuses

Among the academic workforce, the rapid expansion of universities in the 1960s and 1970s involved a significant recruitment of young academics aged in their 20s and 30s, many of them recruited from overseas, especially the United Kingdom. That the Australian academic workforce in the 1970s was an extremely young one is evident in Figure 4, which shows the age structure of Australian university lecturers and tutors at the 1976 population census. Indeed, at that time the academic workforce was younger than the national workforce: 61.7% were aged under 40, compared with 60.5% of the national workforce.

Over the subsequent years, however, additions to the academic workforce were much lower and this young workforce aged in place. The rapid influx of young academics into the Australian university system in the 1960s and 1970s, followed by a period of slow growth in the number of academic jobs because of demographic and management shifts, produced a high degree of ‘age heaping’ in the Australian university teacher workforce.

Figure 4 Age–sex structure of university lecturers and tutors, Australia, 1976



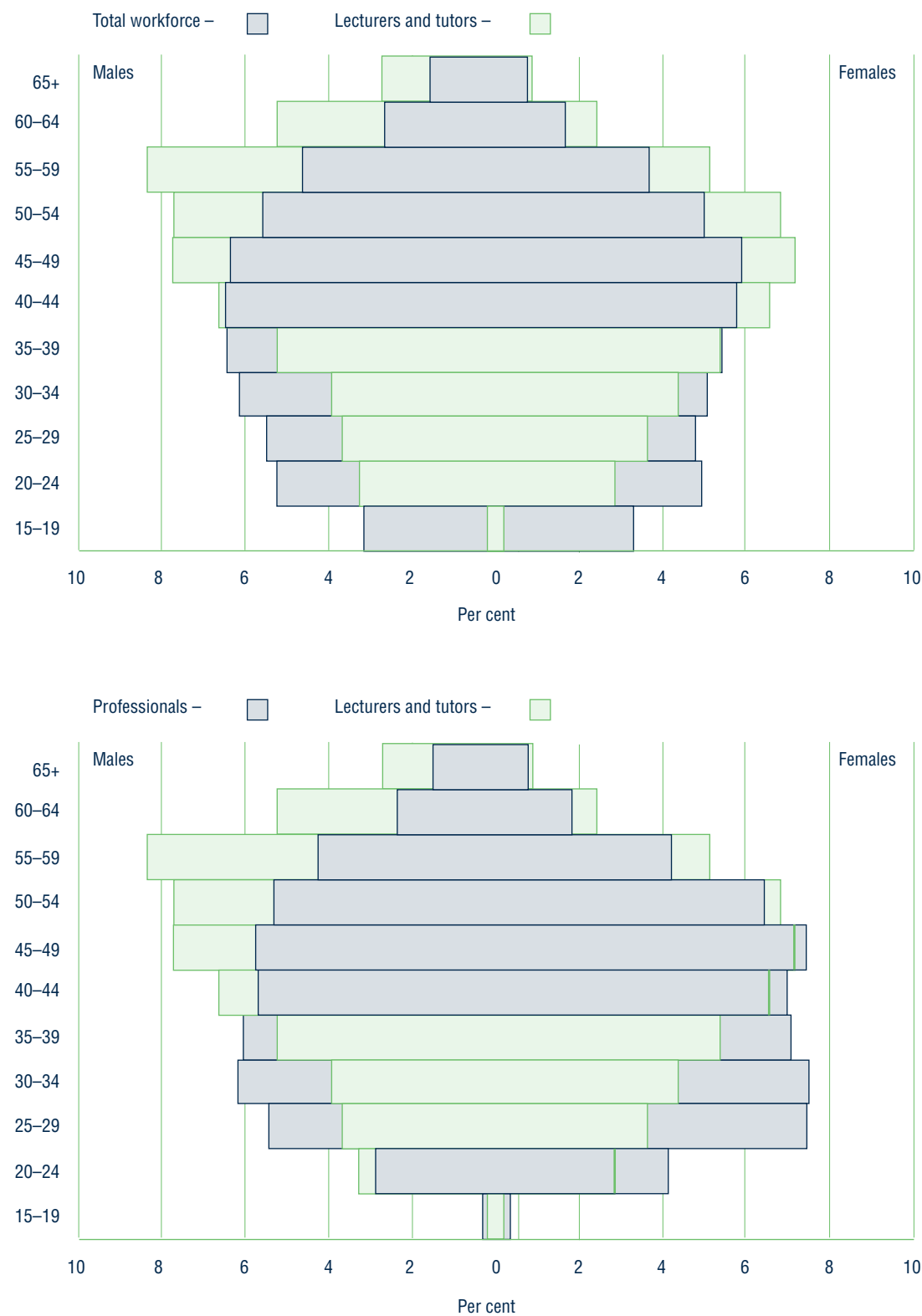
Source: ABS 1976 Census

In Figure 5, the age structure of the Australian labour force at the 2006 Census is overlaid on that of the academic workforce. It is apparent that the academic workforce is significantly older than the total workforce, with slightly higher proportions in the 45+ (for males) and 40+ (for females) age categories and significant under-representation in the younger ages.

Figure 5 shows that the university teaching workforce is more concentrated in the older age groups than not only the total workforce but also the total professional workforce.

Despite an improvement over earlier years, it is evident women are still under-represented in the workforce. The differences are apparent in Table 4, which shows that only a third of lecturers and tutors were aged under 40 in 2001, compared to half of the total workforce and half of professionals. Even 37% of doctors were under 40, and doctors are the next oldest group to university lecturers among professionals. Note that, of information technology professionals, more than two-thirds are aged under 40 years. It is clear that Generation X is substantially under-represented in the academic workforce compared with other professional areas and the workforce as a whole. There are also some substantial gender differences, as Table 5 indicates. Among the older lecturing staff, there are four men for every woman aged over 55.

Figure 5 Age–sex structures of academic staff and the Australian workforce, and academic staff and professionals, 2006



Source: ABS 2001 Census

Table 4 Percentage of the workforce, by age group, Australia, 2006

	University lecturers and tutors	Total workforce	Professionals	Doctors	Computing professionals
% aged 55+ years	24.7	15.0	14.9	22.4	5.8
% aged 45+ years	54.2	37.8	40.0	48.6	23.8
% less than 40 years	32.7	49.9	47.4	37.0	62.2

Source: ABS 2006 Census

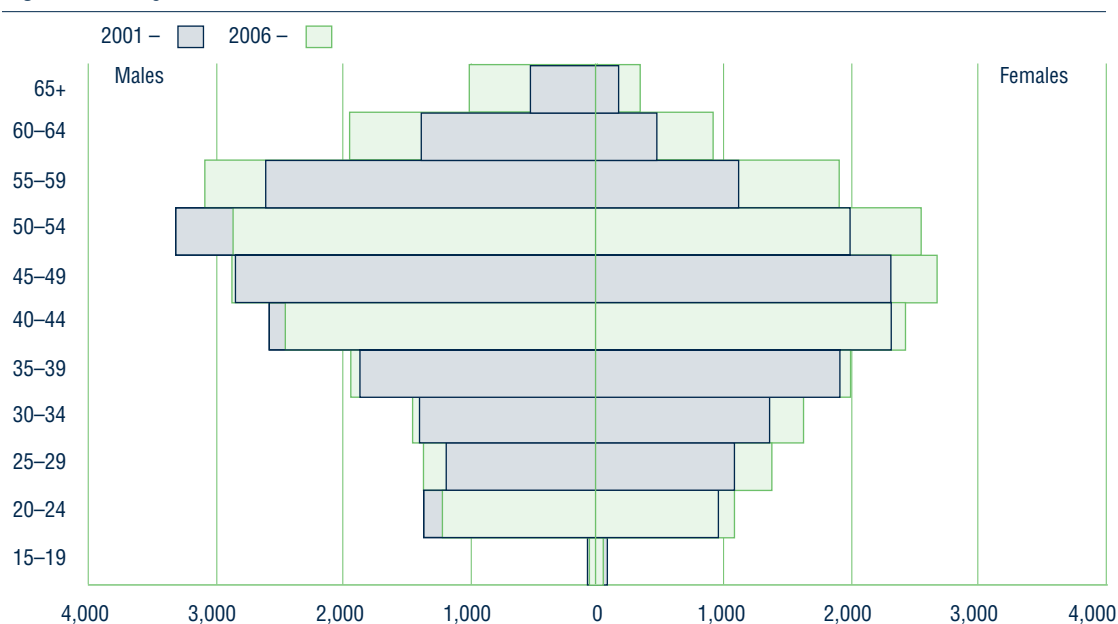
Table 5 Sex ratio of the workforce (males per 100 females), by age group, Australia, 2006

	University lecturers and tutors	Total workforce	Professionals	Doctors	Computing professionals
55 years and over	192.1	146.7	119.5	459.0	543.7
45 years and over	140.9	122.8	93.1	277.8	414.4
Under 40 years	98.7	113.2	79.1	119.2	414.4

Source: ABS 2006 Census

The improvement in gender balance with decreasing age is evident in the fact that among lecturers aged under 40 years the sex ratio was 98.7 in 2006. The improving gender balance over time is evident in all professions: there are more female professionals aged under 40 than males. Even among doctors and IT professionals, where the sex ratios are most unbalanced, there has been an improvement over time.

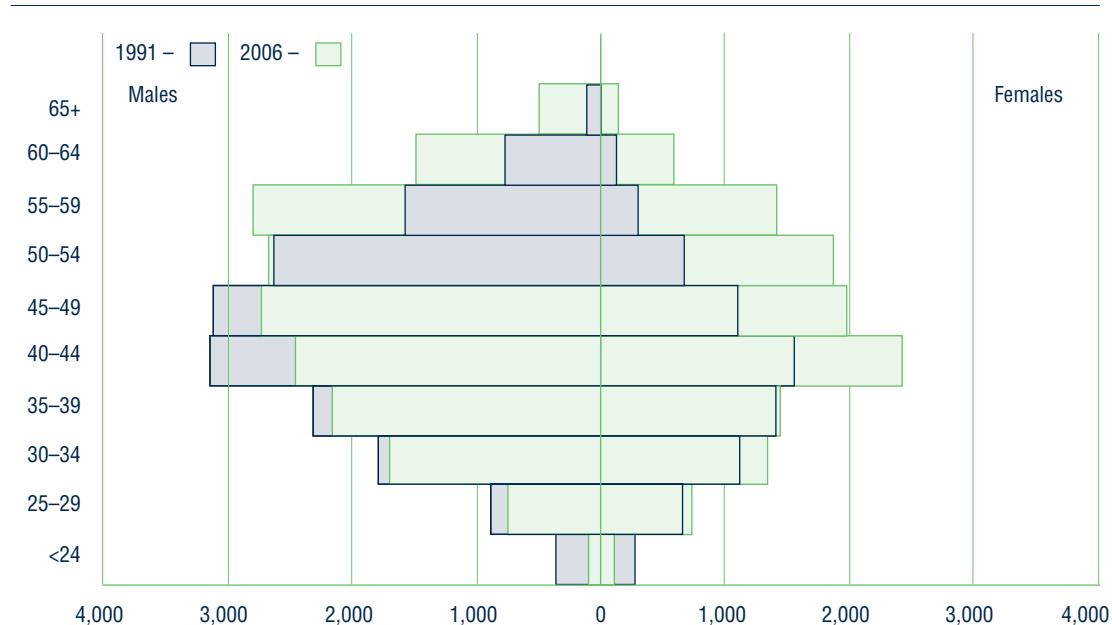
The past decade has seen an unprecedented effort by universities to offer redundancy packages to older academic staff in a push to increase student–staff ratios, reduce the number of higher level academic staff and reduce the overall costs of the academic teaching workforce. Nevertheless, between the 2001 and 2006 censuses, there was an increase in the ageing of the academic workforce. This is apparent in Figure 6, in which the 2001 and 2006 age pyramids of lecturers and tutors have been overlaid. There were higher numbers of men aged 25–29 and of women of all younger ages in 2006 than in 2001, reflecting some increased recruitment as well as higher gains of women than men. However, the major net increases over the 2001–06 period were in the 55+ group for men and 50+ for women. Hence, the ageing of the academic workforce continued.

Figure 6 Age–sex structure of lecturers and tutors, Australia, 2001 and 2006

Source: ABS 2001 and 2006 Censuses

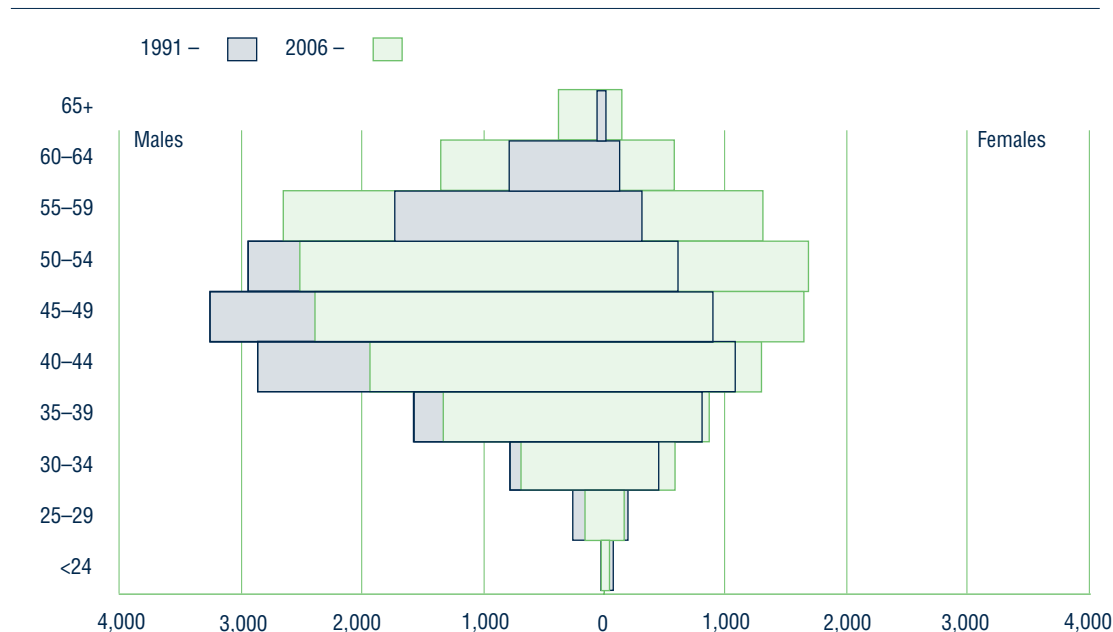
The patterns of further ageing in the academic workforce reflected in the census data are also evident in DEST data. Figure 7 overlays the age–sex structure of the Australian academic workforce in 1991 with that in 2006; it is clear the workforce has aged. Over the 15 years, the academic workforce aged over 50 increased by more than 80%, while the numbers aged under 50 decreased by 4% (from 22,078 to 21,262). The percentage of the workforce aged over 50 increased from 26% in 1991 to 39.8% in 2006. Figure 8 and Figure 9 compare the patterns for tenured and contract staff. It is apparent that the tenured staff is somewhat older than the contract staff, although both have aged over the period. The proportion of tenured staff aged over 50 increased from 34.9% in 1991 to 49.0% in 2006, while among contract staff the increase was from 10.8% to 26.2%.

Figure 7 Age–sex structure of academic staff, Australia, 1991 and 2006

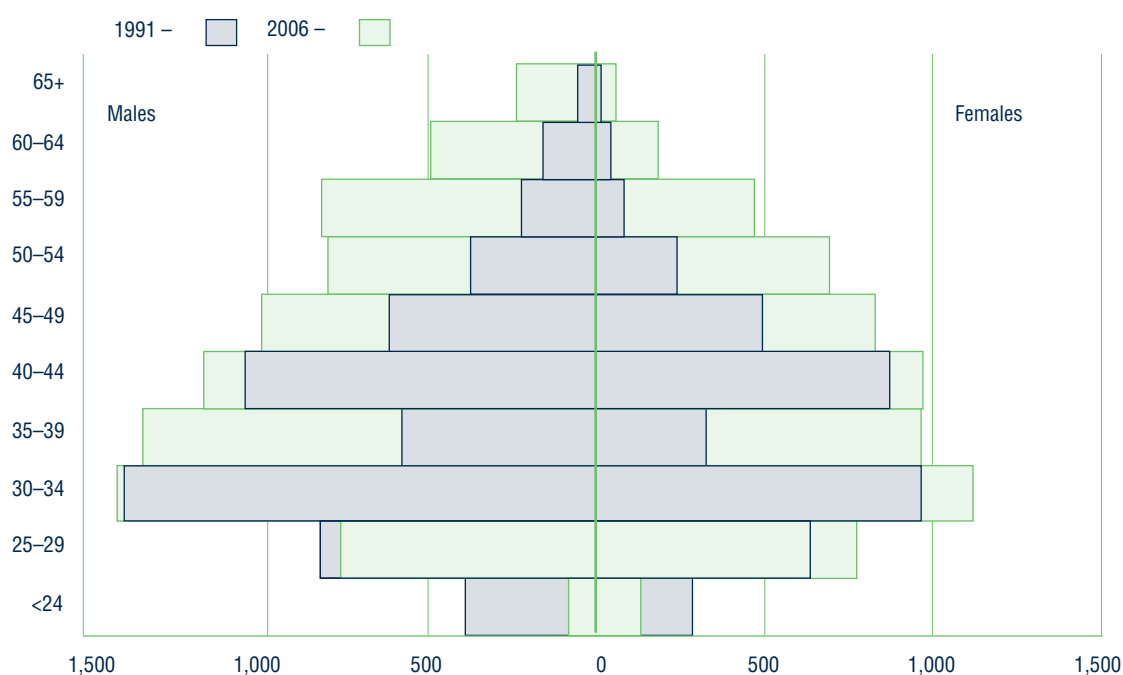


Source: DEST, unpublished data

Figure 8 Age–sex structure of academic tenured staff, Australia, 1991 and 2006



Source: DEST, unpublished data

Figure 9 Age–sex structure of academic contract staff, Australia, 1991 and 2006

Source: DEST, unpublished data

In summary, there are four defining elements in the demography of the contemporary Australian academic workforce:

- relatively slow net growth
- ‘heaping’ into a narrow range of age categories, giving an unbalanced age structure
- a mature age structure dominated by the older age groups
- an imbalanced, although improving, gender ratio.

These characteristics distinguish the academic profession from other professions and, because a high proportion will be entering retirement ages in the next 15 years, they confront the sector with a recruitment challenge.

Chapter 5

Patterns in specific discipline areas

There is a pressing need in Australia for a more disaggregated analysis of these trends for particular institutions and for specific discipline areas. This is evidenced by the results presented in this section. DEST has made available information on the age structure of a number of disciplinary groups in 2006. Over all disciplines, 46.1% of the academic staff (29,205 people) in the dataset were aged 50 years or over.

Table 6 shows the disciplinary groups in which more than half the staff were 50 or older in 2006, and includes some important sectors. Most noticeable is the representation in Education (teacher and general), which is clearly one of the oldest major subject areas in Australian universities.

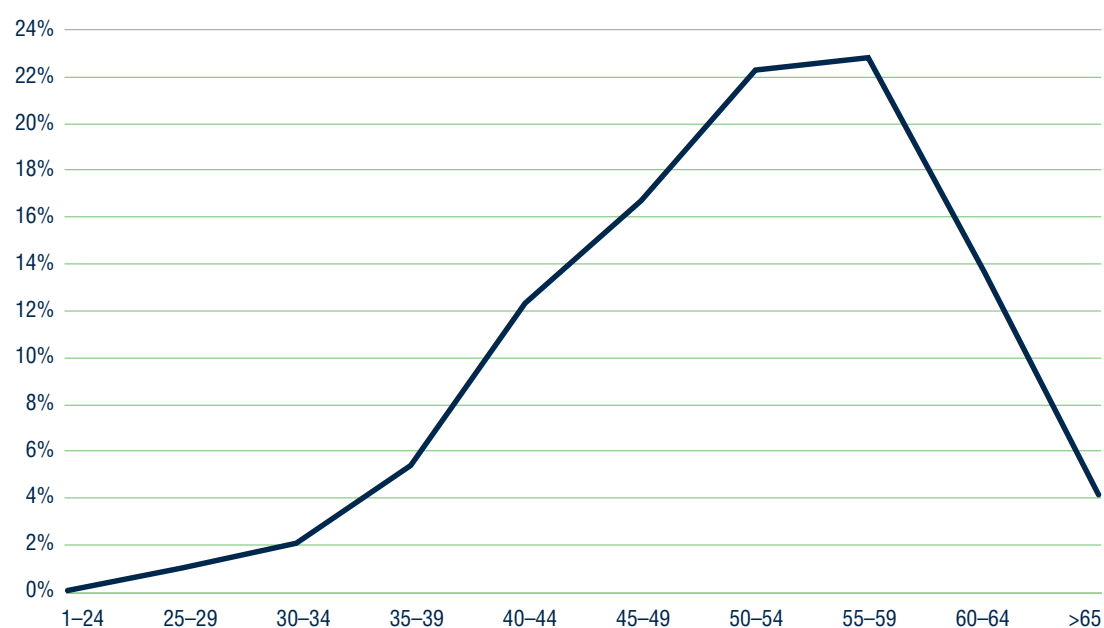
This is readily apparent when we examine the full age profile of the key education organisational areas. It is evident that few academics in Teacher Education are aged under 40 (Figure 10). Over the next 15 years, more than half of them will retire, even if a significant number stay on beyond the age of 65. This is particularly significant, given that there will be a significant demand for schoolteachers in many areas over that period. This is because the schoolteacher age profile in Australia also has a disproportionate number of people in the baby boom ages who will retire during that time (Hugo 2008). Similar age structures are evident in General Education (Figure 11) and Curriculum and Education Studies (Figure 12).

Table 6 Australian academic staff: academic organisational units with high proportions aged 50 years or more, 2006

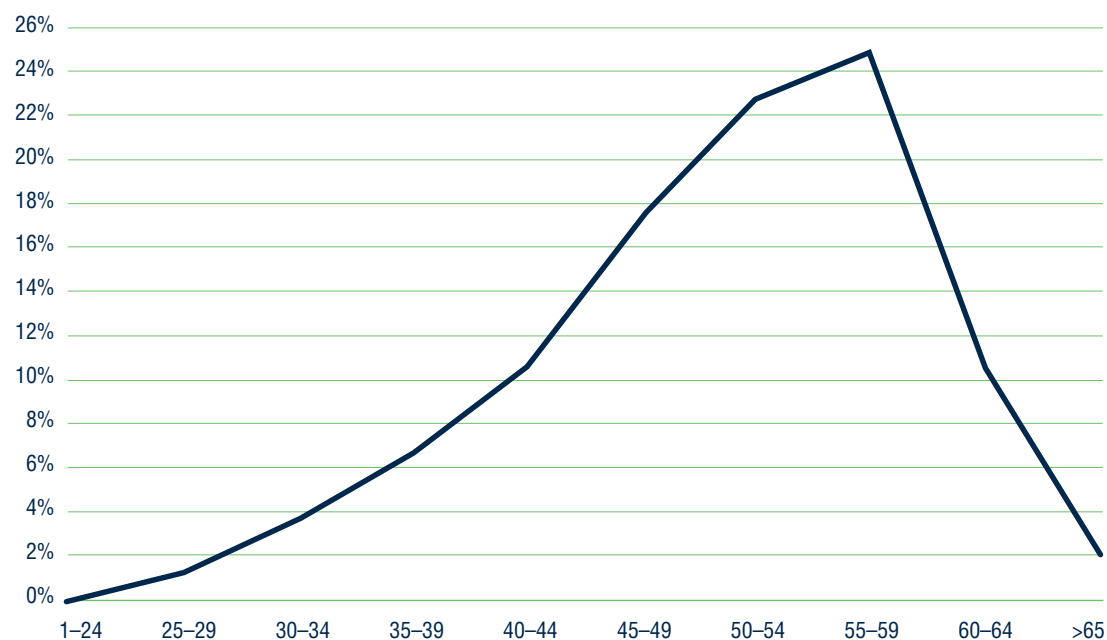
Academic organisational unit	No. of staff	% aged 50+
Teacher Education	696	62.8
Education—General	1,126	60.4
Agriculture	85	60.0
Curriculum and Education Studies	181	58.6
Human Welfare Studies	196	57.6
Visual Arts	213	56.8
Information Systems	176	53.9
Studies in Human Society	733	53.2
Mathematical Sciences	444	52.7
Nursing	789	51.3
Information Technology	925	50.0

Note: Only units with more than 60 members are included.

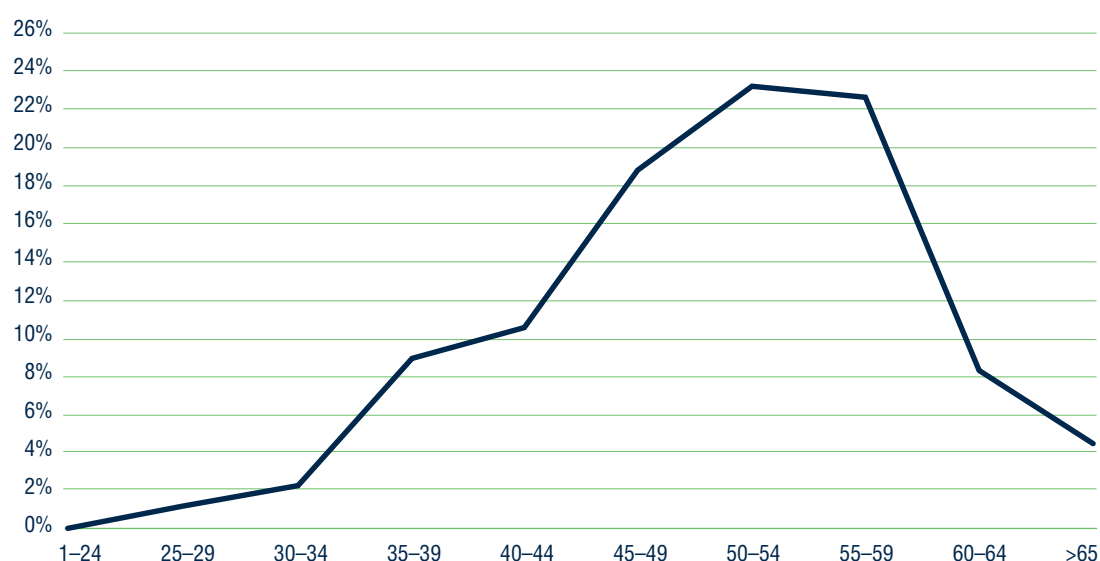
Source: DEST, unpublished data from Universities Australia

Figure 10 Age structure of academic staff in Teacher Education in Australian universities, 2006

Source: DEST, unpublished data for Universities Australia

Figure 11 Age structure of academic staff in General Education in Australian universities, 2006

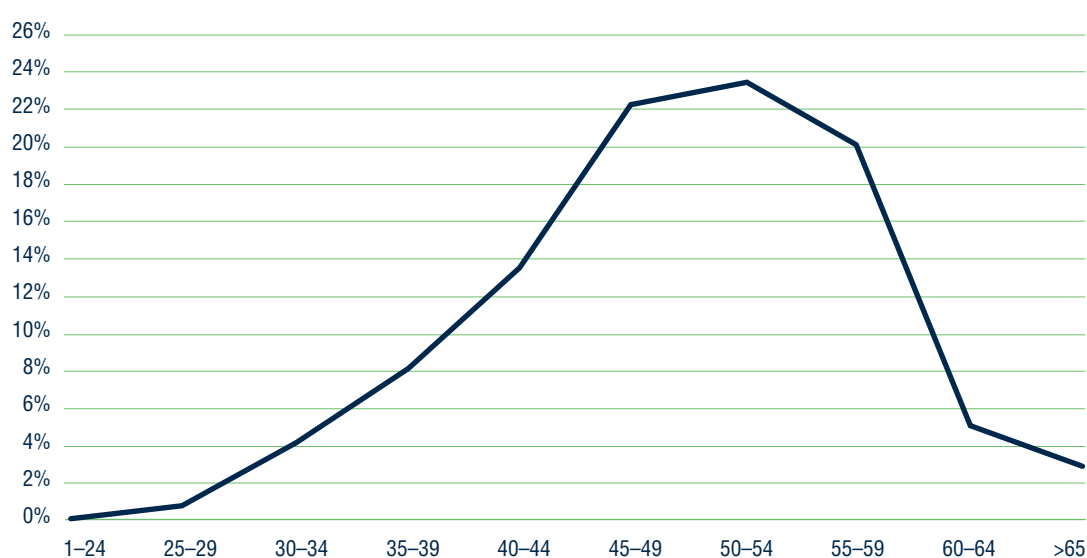
Source: DEST, unpublished data for Universities Australia

Figure 12 Age structure of academic staff in Curriculum and Education Studies in Australian universities, 2006

Source: DEST, unpublished data for Universities Australia

With the ageing of the population, there are major concerns about the pressure that will be placed on the public health system (Department of Treasury 2002; Productivity Commission 2005). Yet it is apparent that there is some ageing of the staff teaching in the health area. Of particular concern is Nursing, in which 51.3% of academics were aged 50 years or over in 2006 (Table 6). Figure 13 shows the mature age structure of the nursing education workforce. Given the accelerating need for nurses because of ageing, this is an issue of concern.

Furthermore, Table 7 demonstrates that, while there is some variation between different subsectors of the Health and Medicine sector, there is substantial ageing in several important areas. For example, in Pharmacy only 25.3% are aged 50 years or more, but a further 35% are in their 40s.

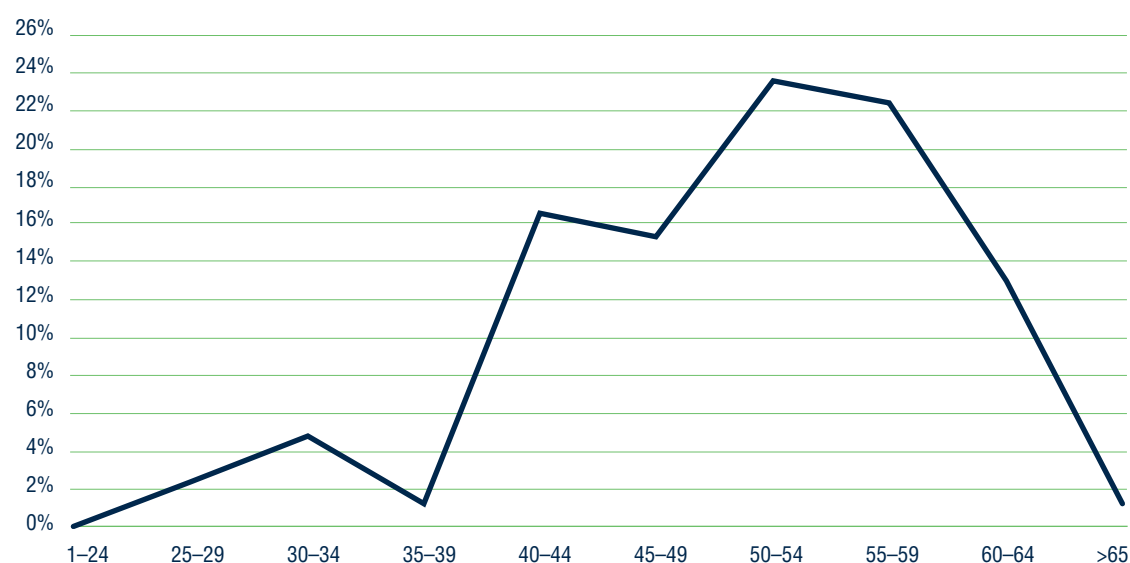
Figure 13 Age structure of academic staff in Nursing in Australian universities, 2006

Source: DEST, unpublished data for Universities Australia

Table 7 Australian university academic staff in health and medicine areas: proportion aged 50 years and over, 2006

Academic organisational unit	No. of staff	% aged 50+
Health—General	1,749	38.3
Medical Studies	1,884	42.9
Nursing	789	51.3
Pharmacy	83	25.3
Dental Studies	201	42.3
Optical Science	21	52.5
Veterinary Studies	57	43.9
Public Health	160	35.6
Radiography	36	25.0
Rehabilitation	271	30.6
Other Health	108	38.9

Source: DEST, unpublished data for Universities Australia

Figure 14 Age structure of academic staff in Agriculture in Australian universities, 2006

Source: DEST, unpublished data for Universities Australia

Agriculture, with 60% of academic staff aged 50 years or more, is another area with a relatively older age structure (Figure 14). Much agriculture is taught in Agricultural and Environmental Studies academic units (360 staff in 2006). Even in that area, however, some 48.3% of staff are aged 50 years or more. Of 14 staff in Fisheries Studies, 71% are 50 or older.

Another area in Table 6 with a mature age structure is Studies in Human Society, with 53.2% aged 50 years or more. As Table 8 indicates, the humanities, arts and social sciences areas in universities generally have quite old staff. While only Studies in Human Society and Human Welfare Studies and Services have more than 50% aged 50 years or more, the levels are in the high 40% range for Language and Literature, Philosophy, Political Science, Society and Culture, and Other Society Studies. Behavioural Sciences had the highest representation of younger ages but, even so, 41.3% were 50 or older.

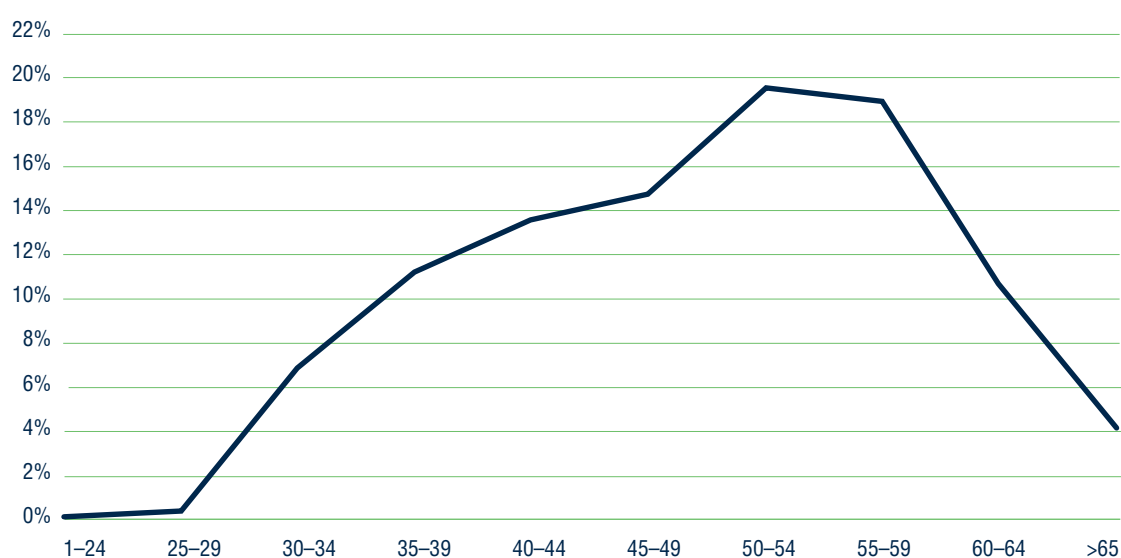
Typical age structures for this sector are shown in Figure 15 (Studies in Human Society) and Figure 16 (Human Welfare Studies and Services). The latter group has the oldest age structure of this group of subdisciplines and, as is the case with nursing teaching, there is concern that there is a significant recruitment challenge ahead in this crucial service area.

Table 8 Australian university academic staff in humanities, arts and social sciences: proportion aged 50 years and over, 2006

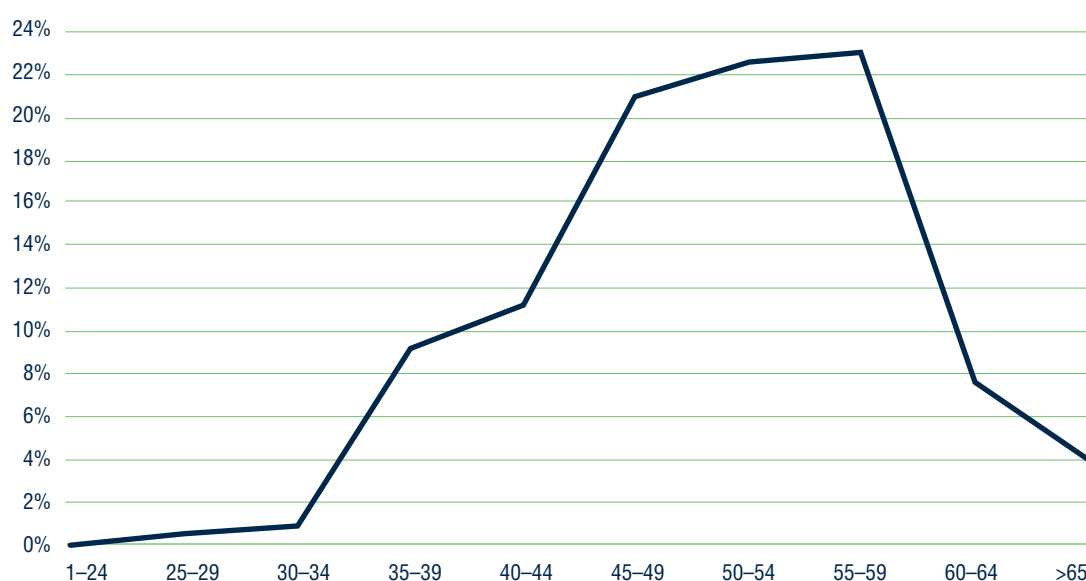
Academic organisational unit	No. of staff	% aged 50+
Studies in Human Society	733	53.2
Language and Literature	586	49.7
Philosophy	117	47.8
Political Science	205	49.7
Society and Culture	2,339	49.9
Human Welfare Studies and Services	196	57.2
Behavioural Science	748	41.3
Other Society Studies	46	47.7

Source: DEST, unpublished data for Universities Australia

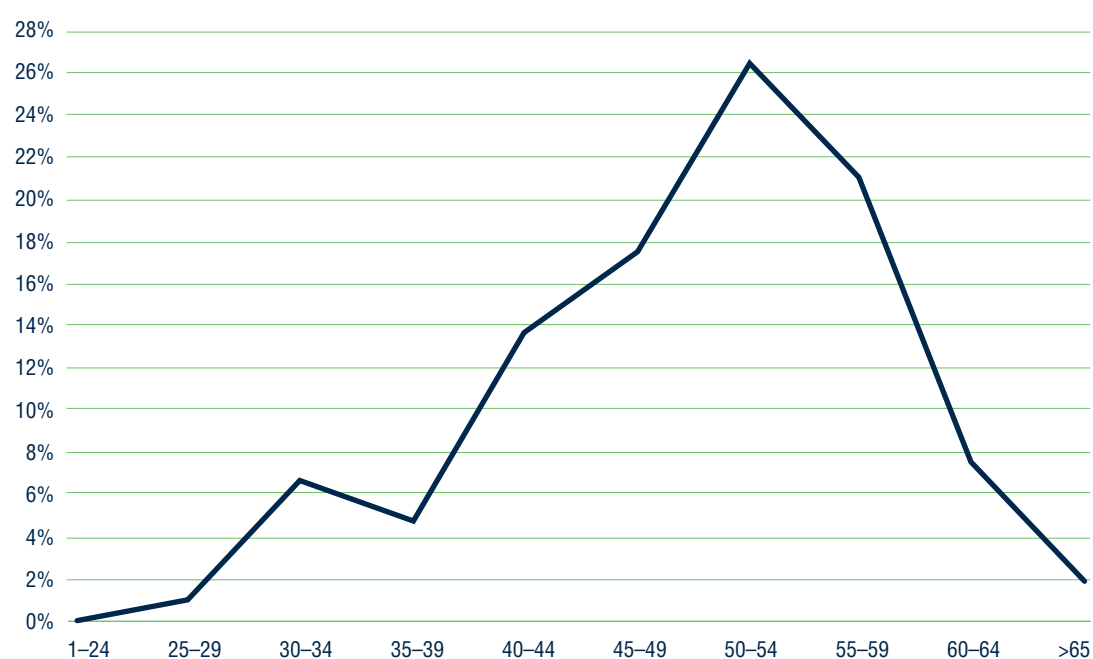
Figure 15 Age structure of academic staff in Studies in Human Society in Australian universities, 2006



Source: DEST, unpublished data for Universities Australia

Figure 16 Age structure of academic staff in Human Welfare Studies and Services in Australian universities, 2006

Source: DEST, unpublished data for Universities Australia

Figure 17 Age structure of academic staff in Visual Arts in Australian universities, 2006

Source: DEST, unpublished data for Universities Australia

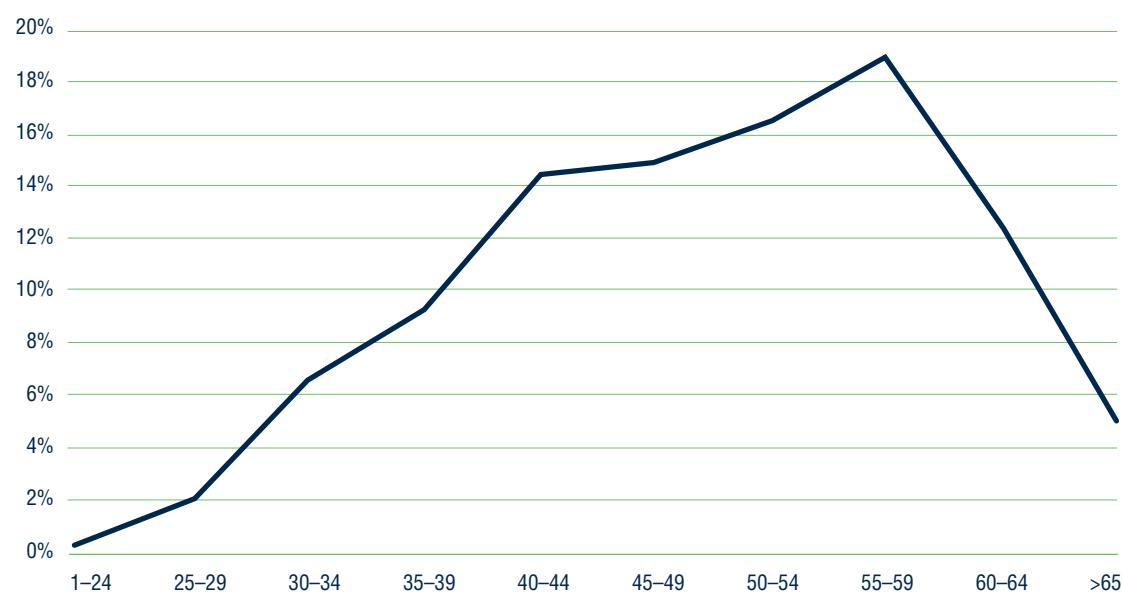
In the creative arts, too, it seems there is a mature age profile. Table 6 indicates that 56.8% of staff teaching Visual Arts in universities is aged 50 years or more. Figure 17 shows the particular concentration of Visual Arts staff in the 45–60 year age group. However, Table 9 shows that more than 46% of staff in the other creative arts subcategories are 50 or older.

Table 9 Australian university academic staff in the creative arts: proportion aged 50 years and over, 2006

Academic organisational unit	No. of staff	% aged 50+
Creative Arts—General	1,009	49.9
Performing Arts	376	46.0
Visual Arts	213	56.8
Graphic and Design	21	47.6
Communication Arts	353	47.9
Other Creative Arts	16	50.1

Source: DEST, unpublished data for Universities Australia

In Australia, as in other OECD countries, concern has been expressed about the intake of students into science in universities, given its crucial significance for innovation and development. Table 6 shows that more than half of the staff in the key area of Mathematical Sciences are aged over 50; the mature age structure is evident in Figure 18. While Mathematical Sciences is the oldest of the science disciplines, it is clear from Table 10 that mature age profiles are in evidence in all the subcategories of science. Chemical Sciences had the youngest profile, but even in that case 39.5% of staff are aged 50 years or more. The representation of young staff in science is limited: in Physics and Astronomy, 28.3% are aged under 40; in Chemical Sciences, 25%.

Figure 18 Age structure of academic staff in Mathematical Sciences in Australian universities, 2006

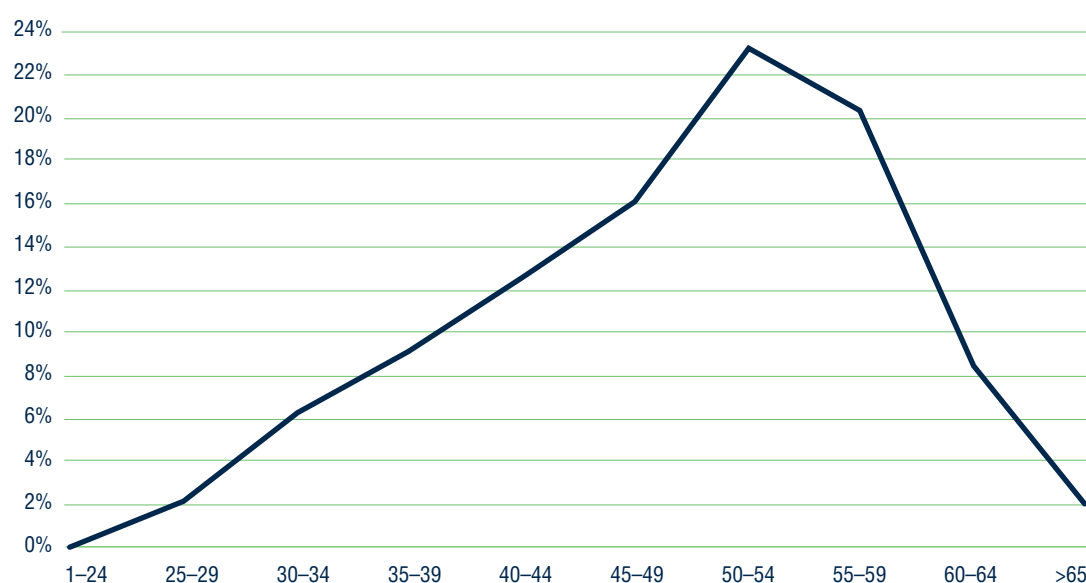
Source: DEST, unpublished data for Universities Australia

Table 10 Australian university academic staff in the sciences: proportion aged 50 years and over, 2006

Academic organisational unit	No. of staff	% aged 50+	% aged under 40
Natural and Physical Sciences	1,961	44.0	20.2
Mathematical Sciences	444	52.7	17.9
Physics and Astronomy	163	45.9	28.3
Chemical Sciences	200	39.5	25.0
Earth Sciences	84	45.3	19.1
Biological Sciences	1,017	44.7	18.7
Other Sciences	141	49.7	24.0

Source: DEST, unpublished data for Universities Australia

While information and communications technology had one of the youngest age profiles of all occupational groups in the general economy, it is apparent that the academic staff in this area are relatively mature. Of staff in Information Systems, 53.9% were aged 50 years or over, and half of those in Information Technology were in this age group (Table 6). Figure 19 shows the concentration in older age groups among Information Systems staff. Although these two sub-areas had the oldest structures, it is apparent from Table 11 that in Information Technology and Computer Science the age structure is significantly younger, with 36.6% and 28.2%, respectively, aged 50 years or more.

Figure 19 Age structure of academic staff in Information Systems in Australian universities, 2006

Source: DEST, unpublished data for Universities Australia

Table 11 Australian university academic staff in information systems: proportion aged 50 years and over, 2006

Academic organisational unit	No. of staff	% aged 50+
Information Technology	925	36.6
Computer Science	252	28.2
Information Systems	143	53.9
Other Information	176	50.0

Source: DEST, unpublished data for Universities Australia

Table 12 Australian university academic staff in sub-areas with smallest proportions aged 50 years and over, 2006

Academic organisational unit	No. of staff	% aged 50+
Pharmacy	83	25.3
Computer Science	252	28.2
Banking and Finance	97	28.9
Rehabilitation	271	30.6
Geometric Engineering	47	32.0
Public Health	160	35.6
Information Technology	176	36.6
Accounting	370	36.8
Law	1032	37.7
Health—General	1749	38.3
Civil Engineering	65	38.5
Sales and Marketing	217	38.7
Other Health	108	38.9
Chemical Sciences	200	39.5

Note: Units with at least 40 members.

Source: DEST, unpublished data for Universities Australia

The least aged sub-areas are summarised in Table 12. In almost all these areas, more than a third of the staff are aged 50 years or more, which indicates there are likely to be a significant number of retirements over the next two decades. A number of health groups are represented in the table (Pharmacy, Rehabilitation, Public Health and Health—General), but given the likely expansion of demand for teaching in this area there is a need to look closely at the influence of retirements on the whole area of health education.

It is interesting that Economics, Commerce and Management is strongly represented, as shown in Table 13. This area has expanded greatly in Australian universities over the past decade, partly because of the large influx of full fee paying overseas students, so it is not surprising that it has a younger age structure. Table 13 shows the pattern for each sub-area; it is evident that even in this sector there were high proportions aged over 50 in Business and Marketing, Tourism, and Management.

Table 13 Australian university academic staff in economics, commerce and management disciplines: proportion aged 50 years and over, 2006

Academic organisational unit	No. of staff	% aged 50+
Management	2,065	46.6
Accounting	370	36.8
Business and Marketing	703	49.6
Sales and Marketing	217	38.7
Tourism	22	50.0
Banking and Finance	97	28.9
Economics and Business	375	41.6

Source: DEST, unpublished data for Universities Australia

Table 14 Australian university academic staff in engineering: proportion aged 50 years and over, 2006

Academic organisational unit	No. of staff	% aged 50+
Engineering	989	41.2
Process Engineering	167	44.4
Mechanical Engineering	121	47.1
Civil Engineering	65	38.5
Geometric Engineering	47	32.0
Electrical Engineering	350	44.6
Other Engineering	21	53.3
Architecture and Design	380	40.9
Architecture and Planning	65	48.0

Source: DEST, unpublished data for Universities Australia

Some Engineering subcategories appear in Table 12 (sub-areas with younger profiles), with Geometric Engineering and Civil Engineering having 32% and 38.5%, respectively, aged 50 years or more. Table 14 shows that in most areas of engineering and architecture more than 40% of the staff are aged 50 years or older, indicating a significant recruiting task in future years.

Another group in Table 12 is Law, which has a relatively balanced age structure (37.7% of the staff being aged 50 years or older).

Chapter 6

The role of international migration

As noted in Section 4, during its period of most rapid growth in the 1960s and 1970s, the Australian academic workforce recruited large numbers of workers from abroad, especially from the United Kingdom. Table 15 shows that 40.5% of academic staff in Australian universities in 2006 were overseas-born. This proportion, which has been relatively stable over the past decade, compares with the 25.7% of the total 2006 workforce and 23.9% of the total 2006 population born overseas.

Table 15 Australian university academic staff born overseas, 1996, 2001 and 2006

Census	Overseas-born	% overseas-born
1996	12,564	39.1
2001	12,375	39.1
2006	14,395	40.5

Source: ABS Population Censuses

The strong focus on skills and qualifications in the Australian immigration program has meant that migrants are strongly represented among the highly qualified population. Table 16 shows that, while the percentage of the Australian-born with PhDs has trebled since 1981, the proportion of the overseas-born is more than twice as much. In 2001, 47.4% of all people with a PhD in Australia were migrants. This dominance of migrants is also evident when we examine the numbers of Australians in particular researcher occupations. Table 17 shows the proportions in various researcher occupations who were overseas-born. The proportions are especially high among natural and physical science researchers and computing professionals, while they are lower among agricultural scientists and nurse educators.

Table 16 Higher degree qualifications, Australian- and overseas-born, 1981–2001

Year	Australian-born	Overseas-born	% overseas-born
1981	0.44	0.97	43.5
1986	0.53	1.21	44.2
1991	0.72	1.58	44.9
1996	1.07	2.30	44.9
2001	1.35	3.22	47.4

Source: 1981 to 2001 One Percent files

Table 17 Percentage overseas-born in research occupations, Australia, 2006

Research occupation	Overseas-born	% overseas-born	Total
2110 Natural and Physical Science Professionals, nfd	2,437	42.1	5,875
2111 Chemists	2,306	41.2	5,674
2112 Geologists and Geophysicists	2,242	37.2	6,094
2113 Life Scientists	1,711	31.0	5,581
2114 Environmental and Agricultural Science Professionals	3,485	17.2	20,515
2115 Medical Scientists	4,773	35.5	13,605
2119 Other Natural and Physical Science Professionals	1,001	32.3	3,137
2125 Electrical and Electronics Engineers	8,151	39.0	21,143
2127 Mining and Materials Engineers	1,822	38.0	4,830
2128 Engineering Technologists	76	31.5	245
2231 Computing Professionals	54,340	43.1	127,423
2293 Mathematicians, Statisticians and Actuaries	1,459	36.3	4,053
2322 Nurse Educators and Researchers	1,014	27.4	3,762
2421 University Lecturers and Tutors	14,395	40.5	35,979
2522 Economists	827	31.0	2,698
2531 Visual Arts and Crafts Professionals	2,213	28.3	8,024
3110 Medical and Science Technical Officers, nfd	911	36.1	2,590
3111 Medical Technical Officers	5,083	28.6	18,175
3112 Science Technical Officers	4,175	26.3	16,100
Total researchers	112,421	36.8	305,503

nfd = not further defined

Source: ABS 2006 Census

Given the significance of international migration in meeting the workforce needs of Australian universities in the past, it is important to examine current migration and its implications for future workforce needs.

In this context it is necessary to note that a substantial change has occurred in global international migration trends over the past two decades (United Nations 2006). Among the changes with most relevance for universities, the following are especially important:

- The scale of migration has increased greatly with the internationalisation of labour markets. The academic labour market has always been international, but this has been more pronounced in recent times.
- Whereas in the past only a few countries sought immigrants (Australia, New Zealand, the United States, Canada), virtually all OECD countries are now seeking skilled migrants.
- There has been a substantial increase in student migration, especially at the postgraduate level.
- There is an unprecedented global quest for talent (Kuptsch and Pang 2006). Researchers, scientists and highly productive academics are among the most sought after in what has been called a 'talent war'.

These trends have impinged strongly on Australia.

Table 18 shows the pattern of long-term and permanent² migration of academics to and from Australia over the 14 years to 2006–07. There has been a net gain of 8,229 academics over that period. Note that, over

2 Permanent movement is defined by the Department of Immigration and Citizenship as including people migrating to Australia and residents departing permanently.

the past decade, long-term movement has become more significant than permanent movement, although the latter was dominant in the early 1990s. This partly reflects a shift in the Australian immigration system, which introduced new ‘temporary business migration’ categories in 1996, enabling skilled people with job offers to enter Australia to work for up to four years on a temporary residence visa (Khoo et al. 2003). This method of entry is much quicker than permanent migration and it is clear that more academics entering Australian universities from overseas are coming under these arrangements than are coming as permanent residents. Indeed, Australian universities are among the largest users of the temporary business migration visa categories.

Table 18 International migration of academics, Australia, 1993–94 to 2006–07

Year	Long-term			Permanent		
	In	Out	Net	In	Out	Net
1993–94	432	380	52	356	83	273
1994–95	455	336	119	523	61	462
1995–96	503	385	118	541	98	443
1996–97	584	522	62	447	87	360
1997–98	1,181	954	227	393	148	245
1998–99	1,373	1,113	260	502	258	244
1999–2000	1,516	1,182	334	636	332	304
2000–01	1,342	1,014	328	476	363	113
2001–02	1,403	937	466	343	238	105
2002–03	1,419	874	545	278	331	–53
2003–04	1,684	843	841	381	377	4
2004–05	1,601	980	621	375	424	–49
2005–06	1,810	963	847	379	459	–80
2006–07	2,072	1,071	1,001	448	411	37
Total 1993–2007	17,375	11,554	5,821	6,078	3,670	2,408

Source: Department of Immigration and Citizenship unpublished data

While Australia is recording a net gain of academics by migration, there is a high turnover: over the past 15 years there were 23,453 in-movements and 15,224 out-movements for a net gain of 8,229. Out-movements have attracted particular attention in recent times, especially with the release of *Beyond brain drain: mobility, competitiveness and scientific excellence* (Wood 2004). In this respect, the increased permanent out-migration of academics in the past five years evident in Table 18 may be significant.

The Australian discussion on ‘brain drain’ has a number of dimensions. There can be no doubt that, in the case of academics and all skill areas, Australia is gaining more people by migration than it is losing (Birrell et al. 2001; Hugo et al. 2001, 2003). However, there are still some important questions about the in- and out-flows of academic staff to consider. In particular:

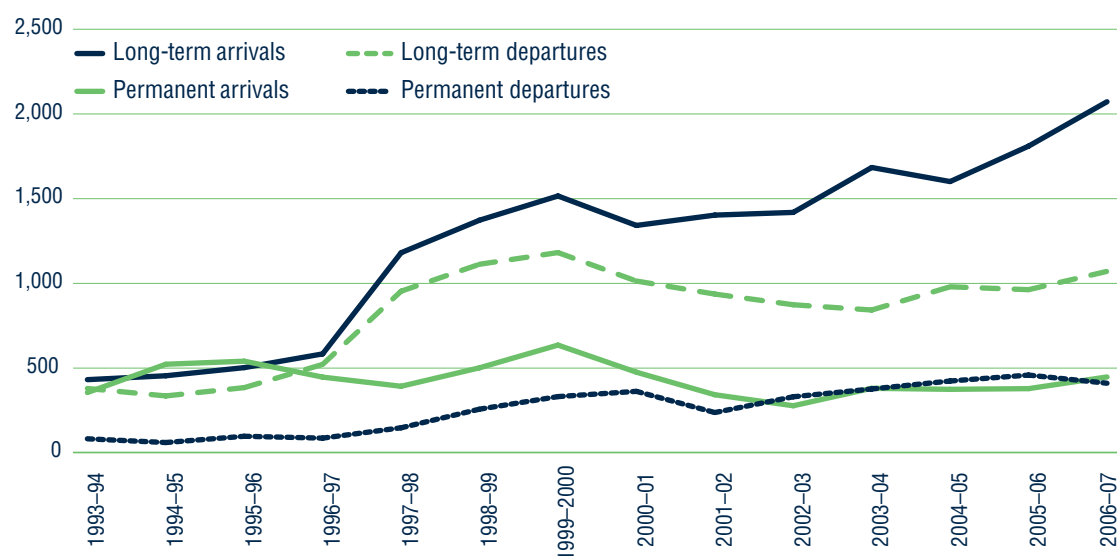
- Are those who are leaving the ‘best of the best’ and of higher ‘quality’ than those who are coming to Australia?
- Are there specific areas in which Australia is experiencing net losses of skilled people—for example, as Thomas (2000, 2002) has suggested is the case for mathematics?

It is also interesting that there is an increasing dominance of long-term rather than permanent movement, meaning that an increasing proportion of immigrant academics are not coming to continuing positions in universities. Many temporary arrivals transfer to permanent residence (Khoo et al. 2008).

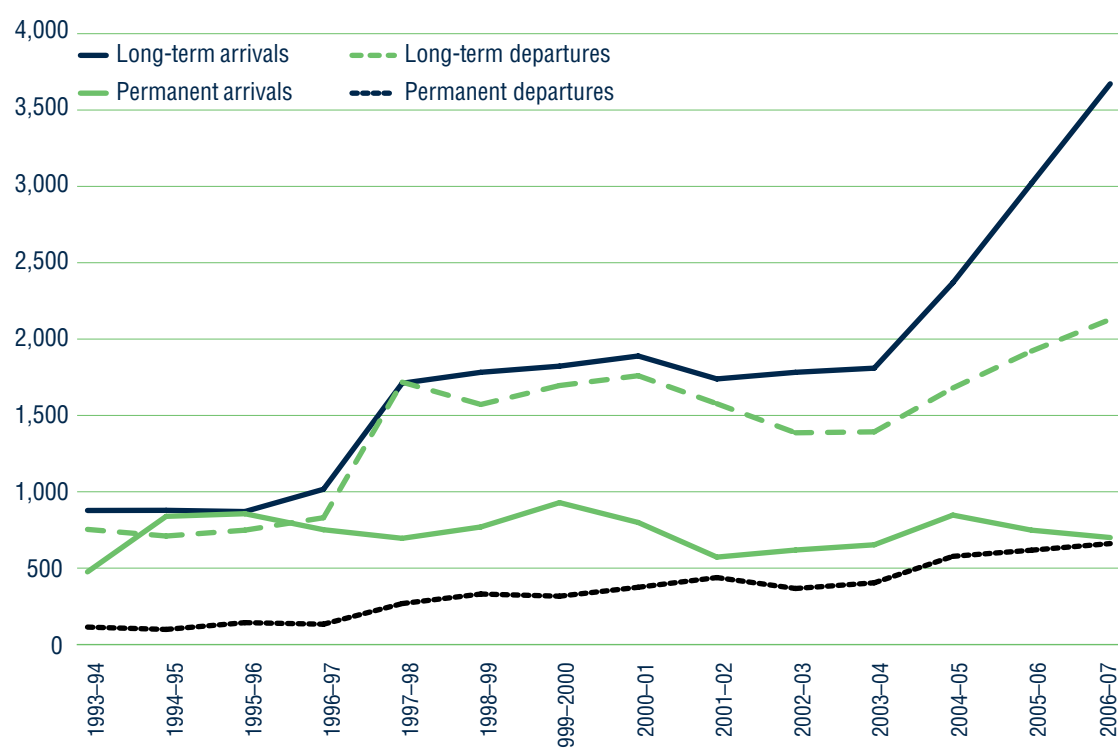
Changes in patterns of migration of academics and scientists are shown in Figure 20, revealing the increasing significance of temporary migration. It is interesting to note the countries from which Australia attracts academics and those to which Australian academics migrate. The main patterns are evident in Table 19. The data are a little misleading, since the numbers of long-term arrivals and departures are undoubtedly inflated by large numbers of students rather than academic staff. The past decade has seen a huge influx of foreign students, many of whom would have been classified in this occupation category since this is their work in their home nations. Moreover, it has been shown that long-term arrivals of students are often double-counted because students often return home for vacations (McDonald et al. 2003). Hence, the data for permanent movements are probably more indicative of the flows of academic teachers. The inflows and outflows are depicted in Figure 21 and Figure 22.

Figure 20 International migration of academics and scientists, Australia, 1993–94 to 2006–07

Academics



Scientists

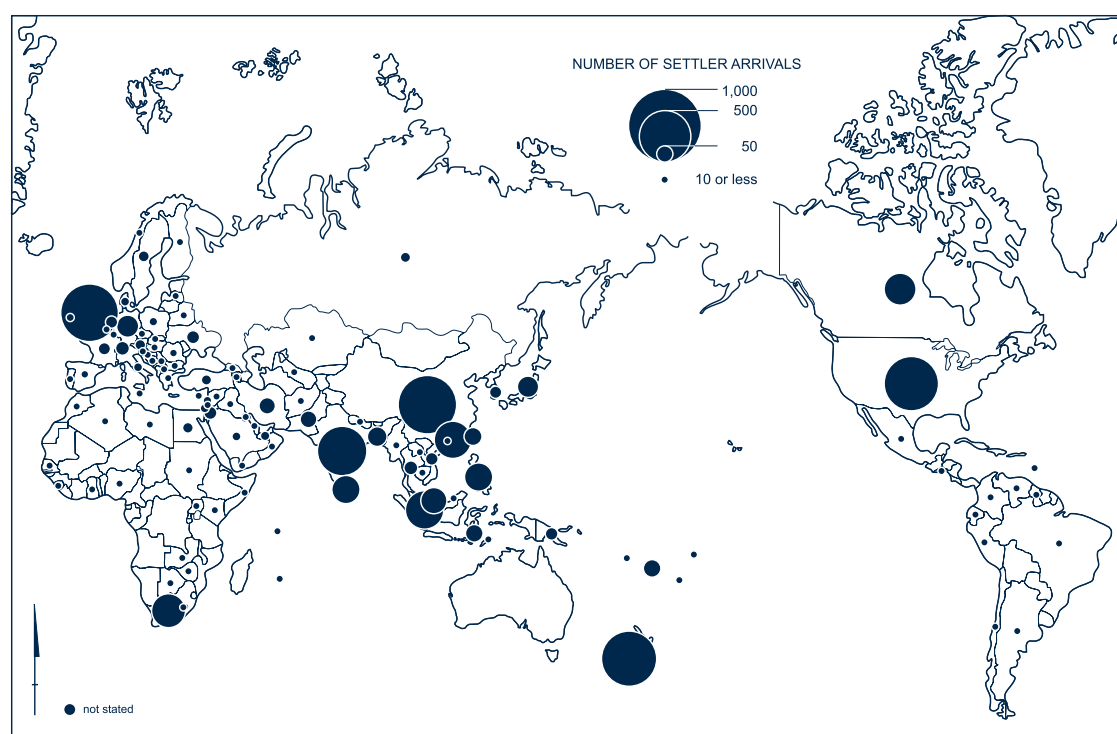


Source: Department of Immigration and Citizenship unpublished data

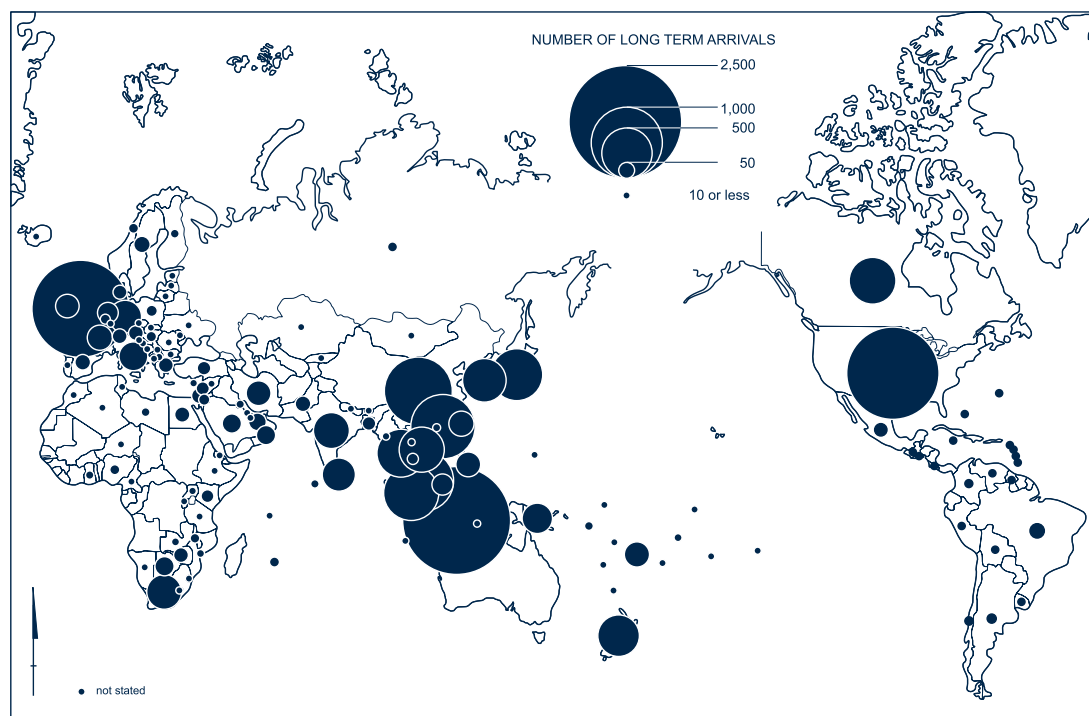
Table 19 Origins of permanent and long-term arrivals and destination of departing lecturers and tutors, Australia, 1993–94 to 2005–06

	Arrivals			Departures		
	Permanent	Long-term	Total	Permanent	Long-term	Total
New Zealand	574	343	917	471	435	906
Other Oceania	95	367	462	45	565	610
United Kingdom	622	1,854	2,476	676	1,475	2,151
Other Europe	485	1,225	1,710	247	674	921
Middle East and North Africa	212	552	764	140	435	575
United States	556	1,673	2,229	602	1,280	1,882
Canada	190	427	617	147	294	441
Other America	38	149	187	11	102	113
Singapore	275	595	870	144	741	885
China	647	906	1,553	62	563	625
Hong Kong	262	818	1,080	371	875	1,246
India	461	252	713	6	125	131
Indonesia	58	2,293	2,351	53	648	701
Japan	84	535	619	85	571	656
Other Asia	741	2,706	3,447	198	1,301	1,499
South Africa	218	236	454	10	115	125
Other Africa	37	294	331	13	152	165
Total	5,555	15,225	20,780	3,281	10,351	13,632

Source: Department of Immigration and Citizenship unpublished data

Figure 21 Permanent arrivals of academics in Australia, by country of last residence, 1993–94 to 2005–06

Source: Department of Immigration and Citizenship

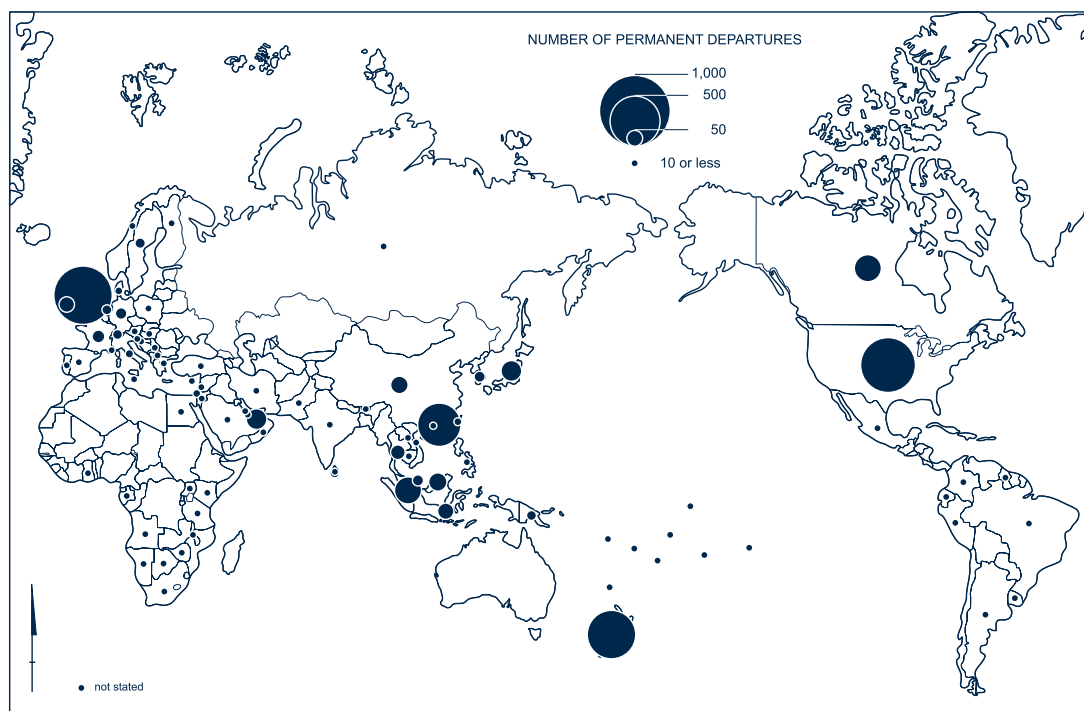
Figure 22 Permanent departures of academics, Australia, by destination, 1993–94 to 2005–06

Source: Department of Immigration and Citizenship

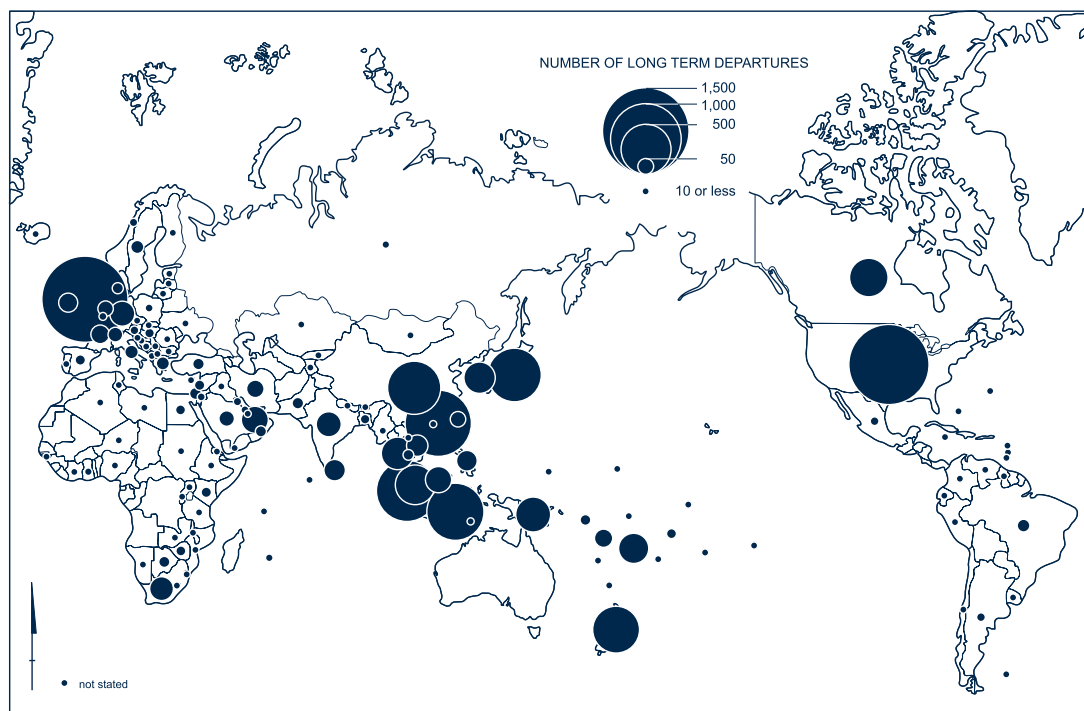
The main origins of lecturers and tutors are interesting. Traditional sources (New Zealand, the United Kingdom, the United States and Other Europe) remain significant, but it is clear Asia has become the most important source of permanent academic arrivals, accounting for 45.5% of the total. Moreover, Asia accounted for 71% of the net permanent gain of academics. For the United Kingdom, the number of incoming permanent immigrant academics (622) is smaller than the number of permanent departures to the UK (676). This is also the case for the United States, for which incoming permanent academics (556) are fewer than the departures (602). It is interesting, too, that there was a small net loss to Hong Kong (262 immigrants and 371 emigrants). By contrast, there were 647 immigrants from China but only 62 emigrants, while for India the figures were 461 and 6.

Figures 23 and 24 show long-term, as opposed to permanent, arrivals and departures of academics. A similar pattern to that for permanent departures is evident.

There is no doubt that the labour market for academics has become increasingly global over the past decade or so, and that the number of Australian academics seeking to work overseas permanently or on a long-term basis has increased. The numbers leaving on a long-term or permanent basis increased from 463 in 1993–94 to 1514 in 1999–2000. The numbers then declined slightly, no doubt in response to the heightened international security alert following the series of terrorist events that began on 11 September 2001. Nevertheless, for the first time in several decades, in 2002–03 more academics left Australia permanently than moved here permanently. Increasing attention is now being focused on the loss of Australian academics through emigration (Hugo et al. 2003; Wood 2004).

Figure 23 Long-term arrivals of academics, Australia, by country of last residence, 1993–94 to 2005–06

Source: Department of Immigration and Citizenship

Figure 24 Long-term departures of academics, Australia, by destination, 1993–94 to 2005–06

Source: Department of Immigration and Citizenship

It is interesting that long-term arrivals from the United Kingdom and the United States outnumber long-term departures for those countries, unlike the pattern for permanent migrants. The numbers for Asia are undoubtedly inflated by student arrivals, but it is apparent that significant numbers of Asians are also coming to Australia to work as academics with temporary residence.

While there is a significant pattern of immigration to Australia by overseas-born academics (and, for many, subsequent emigration), it is interesting to focus on the Australian-born. Table 20 shows that increasing numbers of Australian academics have been moving overseas permanently or on a long-term basis.

Table 20 International migration of Australian-born academics, 1993–94 to 2006–07

Year	Permanent			Long-term		
	In	Out	Net	In	Out	Net
1993–94	2	29	–27	91	108	–17
1994–95	1	20	–19	102	92	10
1995–96	1	38	–37	103	103	0
1996–97	0	34	–34	117	135	–18
1997–98	0	49	–49	221	253	–32
1998–99	0	138	–138	302	443	–141
1999–2000	0	181	–181	329	476	–147
2000–01	0	193	–193	221	385	–164
2001–02	0	152	–152	163	342	–179
2002–03	0	164	–164	192	312	–120
2003–04	0	198	–198	234	292	–58
2004–05	0	234	–234	192	350	–158
2005–06	0	227	–227	221	350	–129
2006–07	0	228	–228	229	367	–138
Totals	4	1,885	–1,881	2,717	4,008	–1,291

Source: Department of Immigration and Citizenship, unpublished data

In a survey of over 2,000 Australian expatriates living in foreign countries (Hugo et al. 2003), some 167 were employed as academics (122 males and 45 females). The reasons given by respondents for going overseas are shown in Table 21, which indicates the overwhelming dominance of employment-related reasons for moving.

Table 21 Survey of Australians overseas, 2001: reasons for emigrating given by academic respondents

Reason	% of responses (n = 167)
Job transfer/exchange	15.0
Better employment opportunities	55.7
Partner's employment	8.4
Career advancement	29.9
Marriage	20.4
Separation/divorce	1.8
Education/study	27.5
Lifestyle	14.4
Higher income	26.9
Professional development	43.1

Source: Emigration Survey 2001

The survey involved both qualitative and quantitative dimensions, and the responses of many academics reflected their feeling that the limitations of the domestic situation were a strong element in their move: *'I see myself as part of a "brain drain" of academic achievers who have left Australia for the UK or USA because of the gradual decay/active destruction of Australian universities. Salaries, teaching conditions and research*

funding are all of massive concern—as is job security. I hope the results from this survey send a clear message that many of us who have left would like to return eventually but fear it is difficult or impossible to do at the present.'

'The most useful point I can make is that I am one of a group of a growing number of Australian academics who realise that I can earn a lot more, get better research funding and a perfectly good lifestyle in Europe.'

'Since leaving Australia, my career in medical research has broadened in a combination teaching, research and administration in ways that would be extremely difficult or impossible in Australia. I have no doubts that my career would have remained stunted had I decided to remain in Australia.'

It is apparent that many are earning more in their current location than they would in Australia, with almost half earning more than A\$100,000 per year. However, many also mentioned the greater access to research funding and superior conditions for research:

'I feel very displaced by the current trend of declining university funding. There are simply no opportunities in university geology in Australia. ARC funding is unreasonably difficult to acquire. I have successfully acquired NSF funding in the USA.'

'I would love to return but none of my compatriots in Australia can come close to the resources and funds at my disposal. I don't feel it is worthwhile to fight for a small grant in Australia when I can readily get large grants (US\$3 million) here. Until the NH and MRC is properly funded there is no point in returning.'

'There are few post doctoral positions available in Australia; however, there is plenty of choice particularly in the USA and UK.'

The bulk of respondents to the survey who were academics were currently residing in the United States or the United Kingdom, as is evident in Table 22. This reflects the predominant pattern of departing Australian academics leaving for North America (especially the United States) and Europe (predominantly the United Kingdom). It may be that some Asian countries, such as Singapore, have become more important in recent years.

Respondents were asked if they 'still considered Australia home', and 67.7% of academics compared to 79.3% of total respondents replied that this was the case. Hence, there was still a strong identification with Australia (Hugo 2004). Some 34.1% of respondents indicated they had plans to return to Australia. Although this was less than the proportion of all expatriate respondents (50.7%), it indicates that a substantial number of Australian academics overseas are prepared to return. Moreover, only 24.3% had definitely decided not to return and 41.3% are undecided. The reasons given by respondents for returning are presented in Table 23. It is clear that overwhelmingly non-economic and non-work related reasons, family and lifestyle are the major elements drawing back Australian academics who are living abroad—not the university and research systems. This was also the case for others who intended to return (Hugo et al. 2003).

Table 22 Survey of Australians overseas, 2001: country of current residence of academic emigrants

Country of residence	No.	%
New Zealand	9	5.4
Other Oceania	3	1.8
UK and Ireland	46	27.5
Southern Europe	1	0.6
Western Europe	16	9.6
Northern Europe	8	4.8
Middle East and North Africa	1	0.6
Southeast Asia	3	1.8
Northeast Asia	9	5.4
North America	69	41.3
South America, Central America and the Caribbean	1	0.6
Africa—excluding North Africa	1	0.6
Total	167	100.0

Source: Emigration Survey 2001

Table 23 Survey of Australians overseas, 2001: reasons given by academics for intending to return to Australia

Reason	% of respondents(n = 57)
Work	17.5
Family	71.9
Lifestyle	80.7
Education	7.0
Retirement	1.8

Source: Emigration Survey 2001

Table 24 shows the reasons given for not coming back yet, and indicates the overwhelming dominance of employment-related factors. That many people have partnered while overseas and/or their children have grown up in those locations are also significant. Nevertheless, there is a strong pattern of work-related reasons being the main factor keeping people from returning.

Table 24 Survey of Australians living overseas, 2001: reasons given by academics for not returning to Australia

Reason	No. of respondents	% (n = 167)
Employment opportunities	65	38.9
Career and promotion opportunities	66	39.5
Business opportunities	8	4.8
Partner's employment	23	13.8
No equivalent jobs in Australia	20	12.0
Marriage/partnership	32	19.2
Children grew up here	40	24.0
Family/friends here	23	13.8
Lifestyle	33	19.8
Established in current location	51	30.5
Higher income	50	29.9
Better taxation system	21	12.6

Source: Emigration Survey 2001

Again, narratives from respondents reflect the conflict between the pull of economic and career factors in foreign countries and the attraction of family and lifestyle elements in Australia:

'I dearly miss Australia and would love to be able to give something back to my homeland. My earning power in the USA is high but I would trade it for the chance to come home. My partner and I both have PhDs and we would have to take a large pay cut.'

'If we were paid decent wages, and taxation was fairer, we'd go back to Australia tomorrow. As it stands there is no incentive for people in education to stay in Australia.'

'If employment opportunities were anywhere near comparable we would choose to stay in Australia. In our experience this applies to most Australians in high-tech in Silicon Valley.'

'We moved overseas initially only for 2–4 years for my husband (PhD in Science) who had greater opportunities overseas. We also now are earning a much higher income than we ever could in Australia. We are now prepared to take a cut in wage for a better lifestyle that you have in Australia, and want to be close to family and friends as we are expecting our first child.'

'We want to go "home" to Australia eventually but you can't go home to no job. Every time we look for work advertised in Australia in the research field, either university or industry-based, there is next to nothing available. In the States there is a shortage of PhD research trained people so jobs are plentiful. It's hard to justify moving home to nothing.'

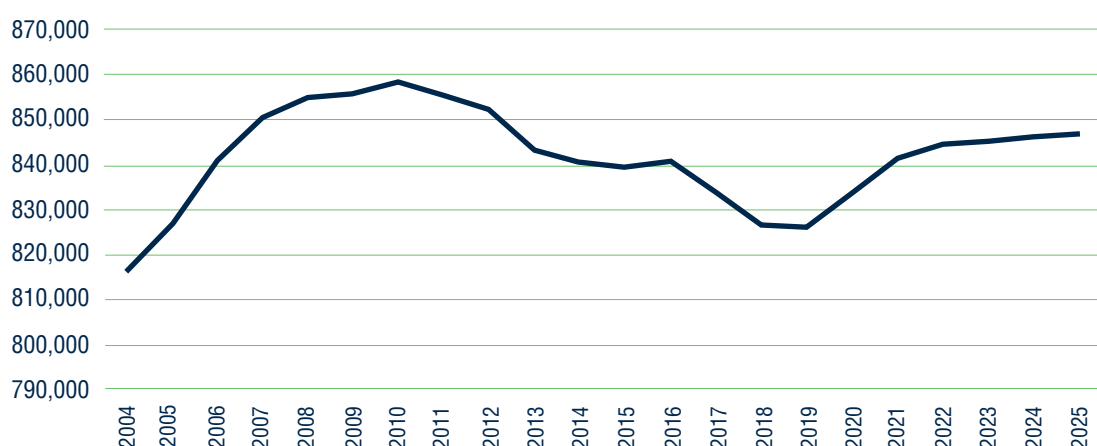
Chapter 7

Future demand for academics

So far, we have been mainly concerned with examining the *supply* dimension of the academic workforce. It is important to also briefly examine the likely future *demand*. The development of a knowledge-intensive economy will undoubtedly mean there will be higher levels of participation in tertiary education. This is despite the fact that in 2008 there were 2,403 fewer applications, 2,741 fewer offers and 9,172 fewer acceptances for undergraduate university places than in 2007 (Universities Australia 2008). Clearly, the buoyant economy and tight labour market are attracting directly into work many school leavers who otherwise may have considered tertiary education.

Although there is a substantial growth of mature-age cohorts in Australian universities, the main feeder group for universities is the 15–17-year-old school leaver age group. The projected numbers in this group are shown in Figure 25. These patterns are influenced by past fertility and immigration and show that the numbers will continue to increase until around 2010 and then fall back to the 2005 level around 2019, before increasing again to 2007 levels by 2025.

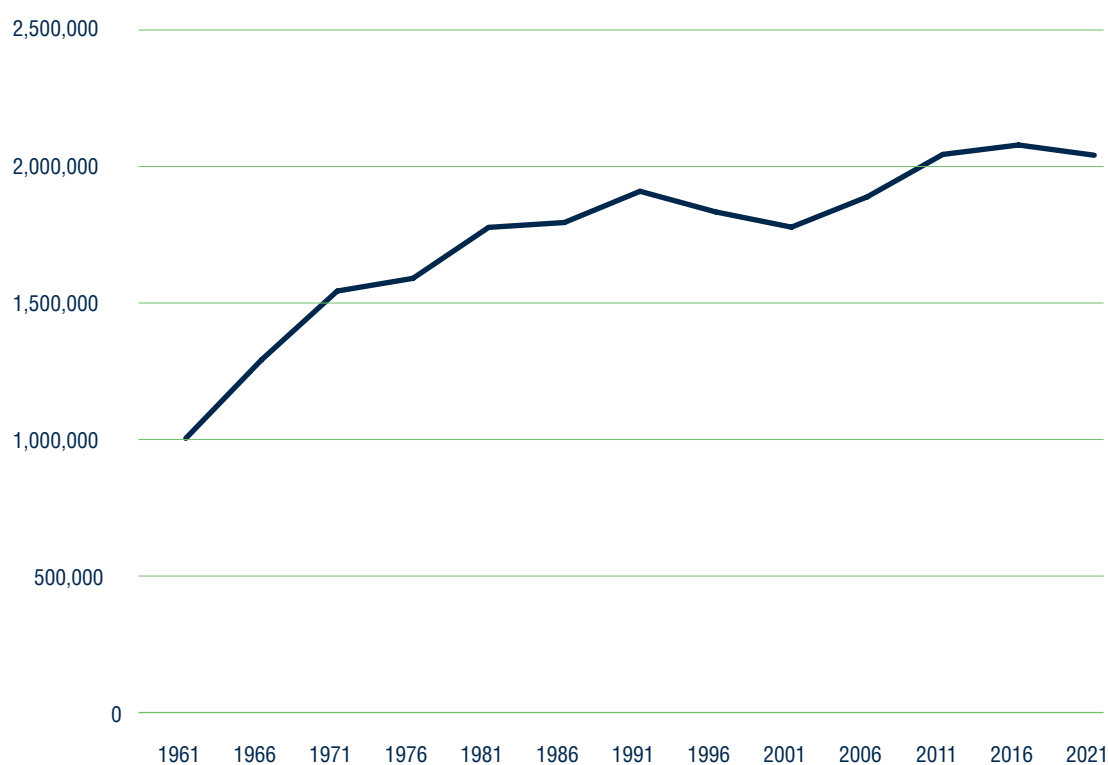
Figure 25 Population, 15–17 year age group, Australia, 2004 to 2025



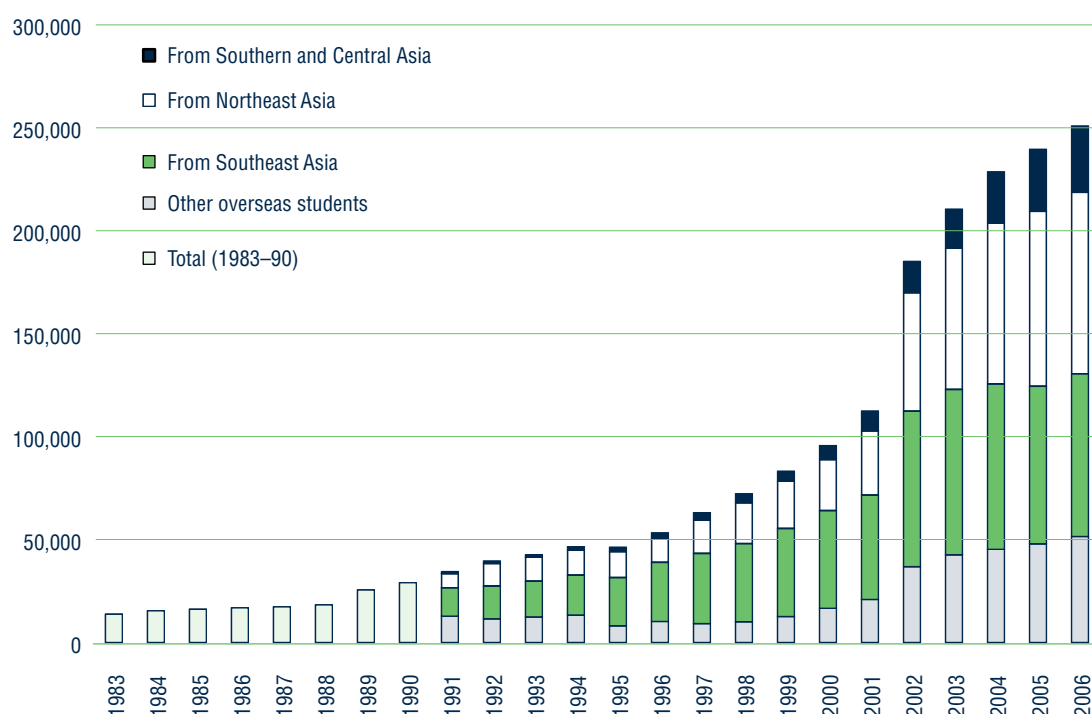
Source: Universities Australia 2008

The peak in 2010 is of almost 860,000 in this age group, while the trough in 2019 is around 827,000—a relatively small gap of around 33,000 or 3.8%. There is no massive decline of undergraduate student numbers on the horizon—at least for demographic reasons. This is evident in Figure 26, which includes a broader age group (18–24 years) with a higher proportion of the university student population. It emphasises the relative stability in numbers over the next two decades.

An additional factor is the increasing overseas student population. Figure 27 shows the rapid growth of this group in Australian universities over the past decade. Australia is now second only to Switzerland in the proportion of the university students who are foreign (Abella 2006). While future flows of foreign students into Australia are by no means assured, as Asian countries expand their own university systems and competition for foreign students increases it is likely there will be continued large numbers of foreign students.

Figure 26 Population aged 18–24, Australia, actual (1961–2006) and projected (2011–2021)

Source: ABS censuses, 1961 to 2006, and ABS projections

Figure 27 Overseas students in Australian universities, 1983 to 2006

Source: DEST, *Students: selected higher education statistics*, various issues

Demand for the teaching and training functions of universities is therefore very unlikely to diminish significantly over the period during which more than a third of the current Australian academic workforce will retire. Moreover, the research and innovation activities of universities will continue to expand.

Chapter 8

Some policy implications

Australian universities face many challenges over the next decade, but that presented by academic staffing must rank as one of the greatest.

That universities are likely to lose between a fifth and a third of their staff in the next decade or so means there are major opportunities for restructuring and changing the balance between courses, subjects, and teaching and research programs without resorting to large numbers of redundancies. On the other hand, there are real challenges in being able to attract high-quality staff members to replace those being lost.

From the age pyramids presented in this paper, it seems there has been a ‘lost generation’ of potential university academics—those currently aged in their 20s and 30s. A comparison of the age pyramids shows that Australian academics aged in their 40s and 50s outnumber those in their 20s and 30s by 31.1%. There is no extant research into why this younger generation of academics has been lost and the extent to which the loss has been due to factors such as a decline in attractiveness of academic positions, salary, conditions etc. and the extent to which alternative sectors have been more attractive.

Moreover, there is an international dimension. In the past decade, there has been an unprecedented internationalisation of the academic labour market. International competition for highly skilled professionals, including academics, has never been more acute. Australia must compete not only for potential academic staff from other countries but also for Australian graduates, who are increasingly examining options in foreign universities. It has never been easier for highly skilled Australians to move to positions in foreign countries, especially other OECD nations. Countries have modified immigration regulations to facilitate the recruiting of the highly skilled, researchers, scientists and technologists. The academic labour market is truly internationalised.

The situation in the United Kingdom is an indication of how the labour market for academics has become even more internationalised. Britain has a significantly younger academic workforce than Australia, with 17.1% aged 55 years and older compared with 24.8% in Australia. A significant contributing factor has been the United Kingdom’s increasing ability to attract and recruit foreign academics, so that currently one in five staff and 27.1% of all new recruits are foreign. There were 1,270 Australians teaching in British universities in 2005–06—the ninth largest foreign group (Universities UK 2007).

In the past decade, redundancy programs have been a major element in the human resources policies of several Australian universities. However, it could be argued that the policies of the next two decades will need to concentrate on three other ‘R’s’—retention, recruitment and return.

A clear implication of the trends examined here is that Australian universities need to look at ways to retain high-quality staff. This applies across the board, but one group is undoubtedly productive older staff in their 50s. Most universities know little about the retirement intentions of this group. It is clearly in the interest of universities to extend the age at retirement of many of its staff, in particular those who continue to achieve at a high level. In universities, as in many other areas, there is often a prevailing view that younger staff, purely by virtue of age, are more productive, innovative and up to date with current developments in their disciplines. However, while it is highly desirable in any academic group to have an age balance among staff, it could prove just as highly problematical to have age-heaping in younger groups as in older groups. This is true in both the teaching and research endeavours of universities.

One feature of Australian universities in recent years has been a substantial increase in average teaching loads. This may have been possible because of the highly experienced teaching workforce in the universities over this period. It could also be that replacing the teaching contribution of a retiree with decades of experience with that of a recent graduate presents difficulties.

In short, a great deal of care needs to be taken in developing policies governing the retirement of older staff. In Australia there has, in the past, been a focus on moving older staff out of the mainstream of universities, although mentoring and emeritus positions are certainly increasing. Universities should be identifying their older staff who are high performers in research and/or teaching and ensuring they do not leave the workforce prematurely. The Australian Government has recently moved to encourage older workers to stay in the workforce, and universities need to move in innovative ways to retain high-quality staff of all ages and to phase retirements.

Gender is another important issue for Australia's future academic staff. Although there have been improvements in gender ratios in Australian universities, women are still under-represented, especially at higher levels in the university. This issue has been investigated in some detail in Australian universities, and the disadvantages facing women in academic jobs are well known (Probert 1999abcd). Nevertheless, despite special initiatives in many universities, inequalities remain. The current demographic analysis indicates that, while the gender equity argument alone should be sufficient for universities to develop programs to ensure that women get equal access to all aspects of academic life, impending labour market deficits make it even more imperative that universities involve women much more than in the past—purely because of the need to recruit sufficient high-quality academics to replace the expected loss over the next decade.

The second 'R' stands for recruitment of staff, which will be more difficult over the next decade or so than it has been in the past. With the tightening of the labour market, high-quality early-career academics will consider not only academic positions in Australian universities when weighing up their working futures, but also positions outside the academic sector or in overseas academic institutions where salaries, research funds and work conditions are often better. In the 1960s and 1970s, a main strategy by which Australian universities overcame academic staff shortfalls created by rapid increases in student numbers was to seek and recruit staff from overseas, especially the United Kingdom.

Recent patterns of movement of academics to and from Australia are analysed elsewhere (Hugo 2005a). That analysis indicates that, while Australia experiences a net immigration of academics, our universities might not be able to compete as effectively for foreign academics as they did during the previous period of shortage of academics. Some of the main problems are as follows:

- An analysis of incoming and outgoing academics over the 1993–94 and 2006–07 period showed that, while there were significant numbers of academic permanent migrants coming to Australia from 'traditional' sources such as the United Kingdom and the United States, there was also significant out-movement to those destinations, so there was only a small net gain. On the other hand, the net gains from Asian nations, such as India and China, have been substantial.
- Many more academics are coming to Australia under the new temporary migration categories (Hugo 1999) than are arriving as permanent settlers, indicating that much of the movement is to short-term, non-tenured positions.
- Australia may be less able to compete for foreign academics in traditional European and North American nations than it was in the 1960s and 1970s because of salary levels, the changing value of the Australian dollar, employment conditions and the availability of research resources.
- While there is no doubt that there is a net gain of academics to Australia through immigration, this is not just a numbers exercise. While we currently lack empirical verification, there would be concern if Australia were losing 'the brightest and the best' of home-grown academics and receiving those with lesser achievements (Wood 2004).

There is no doubt that recruiting overseas academics must be an important strategy for Australian universities over the next two decades, but it will involve quite different approaches from those used previously.

A third, less obvious strategy involves Australian universities developing policies to promote the return of the national academic diaspora, particularly that part of it which includes their former students and staff. The diaspora is an important part of Australian universities' social capital and an important source

of potential future staff. Australia has a diaspora of around 1 million people, and academics, researchers, scientists and technologists are an important part of it (Hugo et al. 2001, 2003).

There has been an increasing flow of Australian academics to foreign universities and research institutions. In many ways, this is a healthy part of our university system in a globalising world, and international mobility between universities is a longstanding practice. The outflow of Australian academics is currently at record levels, although in numerical terms it is more than counterbalanced by an inflow of immigrant academics (Hugo 2005a).

The Australian academic diaspora is a potential source of recruits at a time when Australian universities are facing their greatest recruiting task for three decades. Some are not intending to return because of a perception of a lack of comparable opportunity in Australia (Hugo 2005a). However, others are prepared to forgo this and are keen to return, largely for family and lifestyle reasons. However, research suggests that such intentions often do not result in people returning, but that the intention can often be turned into action if people receive a specific job offer. Undoubtedly, there are also ways in which the life of Australian universities can be enriched by engaging the diaspora in research and teaching activities while its members are still living overseas (Hugo et al. 2003).

Chapter 9

Conclusion

OECD countries are becoming increasingly concerned about the ageing of their populations in general and that of their workforces in particular. The academic workforce has been one of the occupational groupings most influenced by this demographic process.

The ageing of the workforce has not been as great in Australia as in most European countries, but will be especially marked as the baby boom generation retires over the 2011–2031 period, although early-retiring baby boomers are already having an impact. In the Australian academic workforce, this effect is amplified by the disproportionately large percentage of baby boomers in that sector. A heavy attrition of academics will occur over the next two decades and create a demand for academics unprecedented since the 1970s.

However, never before has there been so much competition for Australia's 'brightest and best' PhD graduates. Academic labour markets are now fully internationalised, so Australian graduates can look beyond Australia for better resourced and better paid research and teaching positions, while the private and public sectors are offering a much wider range of opportunities to PhD graduates. Moreover, the attrition of academics is selective. It will be felt at different times, at different levels of intensity in different universities, and especially in different fields of academic activity. It will not only be a substantial numerical loss but also a massive selective loss of accumulated experience and high performance in research and teaching.

Yet we do not know the detailed nature of the impending loss; nor have we researched its likely impacts or its challenges for policymakers and the opportunities it presents for restructuring different areas of teaching and research and making them more relevant to the contemporary and future world. That task is an important one if Australian universities are to maintain, let alone enhance, their quality.

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