

# 'Beyond Brain Drain' - Statistical Notes from the Australian Bureau of Statistics

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**Dennis Trewin**

Australian Statistician

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The following material is extracted from "Measures of a knowledge-based economy and society, Australia" (Catalogue No. 1377.0). This is an electronic publication available on our web site<sup>1</sup>. The messages provide a mixture of good, bad and uncertain news with respect to Australia's strength in science based human capital.

Some of the key messages are:

- Australia is a net importer of "professionals" although there are significant movements in both directions.
- There have been substantial increases in movements over the last 10 years. Departures of professionals from Australia have doubled.
- The level of unmet demand for tertiary education declined from 15.6% in 1994 to 9.3% in 2001.
- Increase in demand was much higher for females than males.
- About 9.6% of the population had a Bachelor degree or above in 1992. Ten years later this had increased to 17.8%.
- Recent graduates were far more successful in finding employment in 2001 than 1991.
- In percentage terms, Australia rates low among the OECD countries for graduates with science and engineering degrees.
- Australia has a relatively high percentage of foreign PhD students.



## International migration of human resources by selected qualifications and occupations

In 2001–02 there was a net gain of 18,787 persons in selected occupations equivalent to definitions and guidelines in the OECD's manual, *The Measurement of Scientific and Technological Activities, Manual on the Measurement of Human Resources Devoted to S&T* (Canberra Manual).

### PERSONS AGED 15 YEARS AND OVER, ARRIVING AND DEPARTING PERMANENTLY OR LONG-TERM 2001–02

Occupation	no.	no.	no.
	Arrivals	Departures	Net gain
<b>Persons in selected occupations</b>			
Specialist managers	6,762	3,840	2,922
Professionals			
Natural and physical science	2,324	2,030	294
Building and engineering	9,944	7,131	2,813
Computing	9,478	4,415	5,063
Health	10,656	8,416	2,240
Education	11,001	10,091	910
Other	29,014	24,469	4,545
<i>Total persons in selected occupations</i>	<i>79,179</i>	<i>60,392</i>	<i>18,787</i>
Other occupations	81,110	66,885	14,225
Not stated/inadequately described	22,149	11,620	10,529
Not applicable(a)	125,275	54,376	70,899
<b>Total</b>	<b>307,713</b>	<b>193,273</b>	<b>114,440</b>

(a) Includes retired, pensioners, disabled, housekeepers, students and unemployed.

Source: ABS Human Resources by Selected Qualifications and Occupations Australia, 2001 (cat. no. 8149.0).

**Unmet demand for education as a proportion of total demand** [Indicator being considered for inclusion in KBE/S web product]

Female demand for non-school study increased by 22% between 1994 and 2001, while male demand increased by only 6% over the same period.

**TOTAL, MET AND UNMET DEMAND FOR NON-SCHOOL STUDY, By age & sex**

	1994(a)				2001			
	Total demand for study(b) '000	Met demand(c) '000	Unmet demand(d) '000	Unmet demand as a proportion of total demand %	Total demand for study(b) '000	Met demand(c) '000	Unmet demand(d) '000	Unmet demand as a proportion of total demand %
<b>Sex</b>								
Males	357.8	301.5	56.3	15.7	380.0	344.9	35.1	9.2
Females	377.5	319.2	58.3	15.4	460.5	417.2	43.3	9.4
<b>Age (years)</b>								
15-24	347.3	300.6	46.7	13.4	380.5	357.9	22.6	5.9
15-19	213.0	189.4	23.6	11.1	223.6	215.4	8.1	3.6
20-24	134.4	111.2	23.1	17.2	156.9	142.4	14.5	9.2
25-34	187.1	152.6	34.6	18.5	190.8	169.7	21.1	11.1
35-44	125.3	105.4	19.9	15.9	150.3	132.7	17.6	11.7
45-64	75.5	62.1	13.4	17.7	118.9	101.8	17	14.3
<b>Total</b>	<b>735.3</b>	<b>620.7</b>	<b>114.6</b>	<b>15.6</b>	<b>840.4</b>	<b>762.1</b>	<b>78.4</b>	<b>9.3</b>

(a) Met demand for 1994 represents only those people studying for a recognised qualification.

(b) People who applied to attend at a non-school educational institution.

(c) People who were studying or deferred their study at the time of the survey, and in the previous year, were either not studying or were studying at a different type

(d) People unable to gain a place at a non-school educational institution.

Met demand data for 1994 to 1996 include only those studying for a recognised qualification. Data are from the ABS's Survey of Education and Work, conducted in May each year, and relate to people aged 15-64 years.

Source: ABS Education and Training Indicators, Australia, 2002 [Cat. no. 4230.0].

## Proportion of all persons aged 15–64 with a non-school qualification

There has been a marked increase in the proportion of people aged 15–64 with a bachelor degree or higher, from 10% in 1992 to 18% in 2002. The proportion of persons whose highest non-school qualification was an Advanced diploma or below has remained relatively constant.

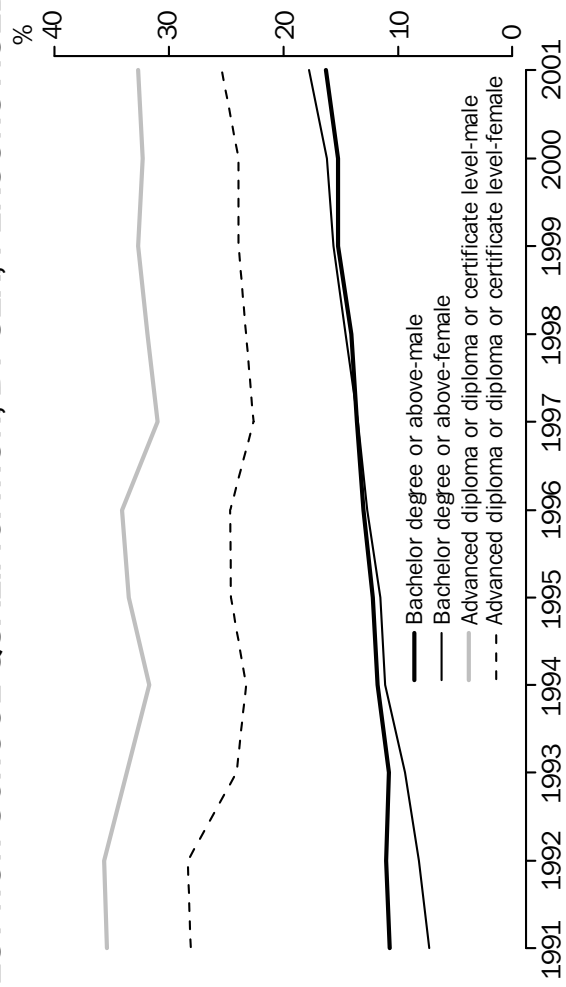
### PROPORTION OF ALL PERSONS AGED 15–64 WITH A NON-SCHOOL QUALIFICATION(a)

Level of highest non-school qualification	1992	1994	1996	1998	2000	2001	2001
	%	%	%	%	%	%	%
<b>Bachelor degree or above</b>	<b>9.6</b>	<b>11.5</b>	<b>12.8</b>	<b>14.3</b>	<b>15.7</b>	<b>17.0</b>	<b>17.8</b>
Advanced diploma / Diploma or below	31.7	27.5	29.4	27.6	28.1	29.1	29.8
Age Group (years)(b)							
15–24	23.0	21.8	23.2	22.1	22.4	24.6	25.1
25–34	51.2	46.6	50.1	51.6	54.0	58.9	59.1
35–44	51.7	48.4	52.2	50.7	52.0	55.5	56.4
45–54	44.8	42.8	46.2	45.6	48.9	52.1	54.0
55–64	36.3	33.6	37.1	36.1	38.6	42.3	44.2
<b>Total(c)</b>	<b>41.7</b>	<b>39.0</b>	<b>42.3</b>	<b>41.9</b>	<b>43.8</b>	<b>47.2</b>	<b>48.2</b>

- (a) Non-school qualification refers to educational attainments other than those of pre-primary, primary or secondary education.  
 (b) Persons in a particular age group with a non-school qualification as a percentage of the total population in that age group.  
 (c) Includes persons whose highest non-school qualification was at a level not determined.

Break in series, 1993 ABSCQ; 1997 computer assisted coding; 2001 ASCED.  
 Source: ABS Education and Work, Australia, (cat. no. 6227.0).

### LEVEL OF HIGHEST NON-SCHOOL QUALIFICATION, BY SEX, PERSONS AGED 15-64 YEARS



Break in series, 1993 ABSCQ; 1997 computer assisted coding; 2001 ASCED.

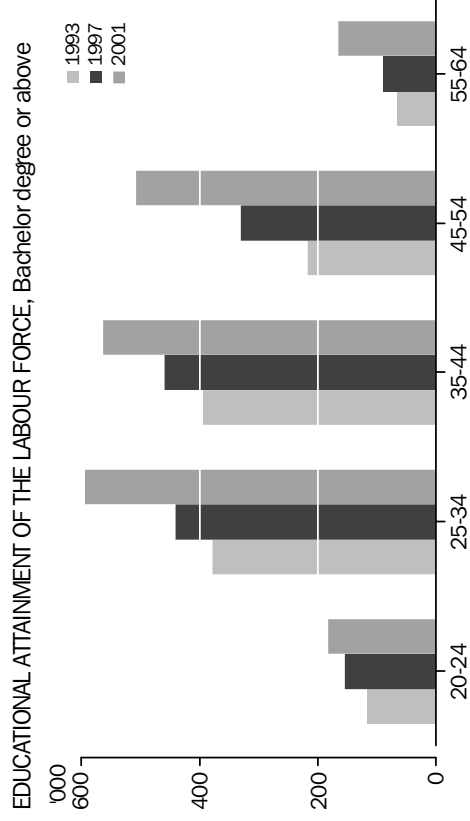
Source: ABS Education and Training Indicators Australia, 2002 (cat. no. 4230.0).

## Higher Educational Attainment of the workforce by age group

### EDUCATIONAL ATTAINMENT OF THE LABOUR FORCE, Bachelor degree or above

	Age Group (years)				
	20-24	25-34	35-44	45-54	55-64
	'000	'000	'000	'000	'000
<b>1993</b>	117.3	378.7	394.2	216.8	66.8
<b>1997</b>	155.1	440.2	459.1	330.4	90.2
<b>2001</b>	182.2	593.2	563.2	507.7	165.3

Source: ABS Education and Training Experience, Australia (cat no. 6278.0).



Source: ABS Education and Training Experience, Australia (cat no. 6278.0).

## Graduate outcomes by qualification, employment status

Of the 158,200 recent university graduates in 2001, 67% were employed four months after completing their qualification. This proportion has remained relatively constant in recent years, after falling below 60% between 1992 and 1994. Since 1991, the proportion of university graduates unemployed four months after their course ended has declined (from 15% in 1991 to 11% in 2001), while the proportion of those not in the labour force remained relatively constant (23% in 1991 and 22% in 2001).

### LABOUR FORCE STATUS OF RECENT UNIVERSITY GRADUATES

	Employed		Employed Total	Unemployed	Not in labour force
	full-time	part-time			
	%	%	%	%	%
	<b>1991</b>				
Postgraduates	70.7	6.3	77.0	12.7	10.2
Bachelor graduates	53.4	4.0	57.4	16.3	26.3
<b>All university graduates</b>	<b>57.5</b>	<b>4.6</b>	<b>62.0</b>	<b>15.4</b>	<b>22.5</b>
	<b>2001</b>				
	%	%	%	%	%
Postgraduates	71.9	9.8	81.6	7.9	10.5
Bachelor graduates	55.6	6.0	61.6	12.0	26.4
<b>All university graduates</b>	<b>60.0</b>	<b>7.0</b>	<b>67.0</b>	<b>10.9</b>	<b>22.1</b>

Source: ABS Education and Training Indicators Australia, 2002 (cat. no. 4230.0). Original source: Graduate Careers Council of Australia (GCCA).

### Main field of highest educational attainment by labour force status

The percentage of persons employed part-time varied from 34% for those whose highest educational attainment was in the field of health, to 9% for those whose main field of highest educational attainment was engineering and related technologies. Females experienced a higher percentage of part-time employment in all fields of highest educational attainment.

#### PERSONS IN MAIN FIELD OF HIGHEST EDUCATIONAL ATTAINMENT BY LABOUR FORCE STATUS 2001(a)

Main field of highest educational attainment	Employed full-time %	Employed part-time %	Unemployed %	Not in the labour force %
Natural and physical sciences	63.4	17.4	3.6	15.6
Information technology	69.9	12.1	6.6	11.4
Engineering and related technologies	76.9	8.6	3.2	11.3
Architecture and building	77.0	9.3	3.0	10.7
Agriculture, environmental & related studies	69.6	14.3	5.6	10.5
Health	48.3	34.0	2.4	15.3
Education	56.9	26.4	1.0	15.7
Management and commerce	67.1	16.3	4.2	12.4
Society and culture	56.1	24.4	2.8	16.7
Creative arts	52.9	26.1	5.5	15.5
Food, hospitality and personal services	54.2	22.2	3.7	19.8
Mixed field programmes(b)	42.5	23.4	6.0	28.1

(a) Labour force status as a proportion of all persons with each main field of highest educational attainment.

(b) Consists mainly of persons whose highest educational attainment was Year 12 or below.

Source: ABS Education and Training Experience, Australia, 2001 (cat no. 6278.0).

#### FEMALES IN MAIN FIELD OF HIGHEST EDUCATIONAL ATTAINMENT BY LABOUR FORCE STATUS 2001(a)

Main field of highest educational attainment	Employed full-time %	Employed part-time %	Unemployed %	Not in the labour force %
Natural and physical sciences	49.0	27.9	2.5	20.6
Information technology	48.4	24.6	12.6	14.4
Engineering and related technologies	48.4	20.7	4.3	26.6
Architecture and building	49.0	41.9	3.5	5.6
Agriculture, environmental & related studies	51.5	24.7	6.9	17.0
Health	39.6	40.6	2.0	17.8
Education	48.5	31.8	1.1	18.6
Management and commerce	53.5	23.8	5.3	17.4
Society and culture	43.6	32.7	3.2	20.5
Creative arts	43.2	30.7	5.1	21.0
Food, hospitality and personal services	37.5	31.7	4.1	26.7
Mixed field programmes(b)	27.1	31.1	4.4	37.4

(a) Labour force status as a proportion of all females with each main field of highest educational attainment.

(b) Consists mainly of females whose highest educational attainment was Year 12 or below.

Source: ABS Education and Training Experience, Australia, 2001 (cat no. 6278.0).

#### MALES IN MAIN FIELD OF HIGHEST EDUCATIONAL ATTAINMENT BY LABOUR FORCE STATUS 2001(a)

Main field of highest educational attainment	Employed full-time %	Employed part-time %	Unemployed %	Not in the labour force %
Natural and physical sciences	74.7	9.1	4.5	11.7
Information technology	80.2	6.2	3.7	10.0
Engineering and related technologies	78.6	7.9	3.1	10.3
Architecture and building	78.1	8.0	2.9	10.9
Agriculture, environmental & related studies	76.4	10.4	5.1	8.1
Health	78.8	10.6	3.8	6.8
Education	77.7	13.0	0.9	8.3
Management and commerce	82.8	7.6	3.0	6.6
Society and culture	77.5	10.2	2.2	10.0
Creative arts	67.4	19.1	6.2	7.3
Food, hospitality and personal services	76.8	9.5	3.3	10.5
Mixed field programmes(b)	61.7	13.7	7.9	16.6

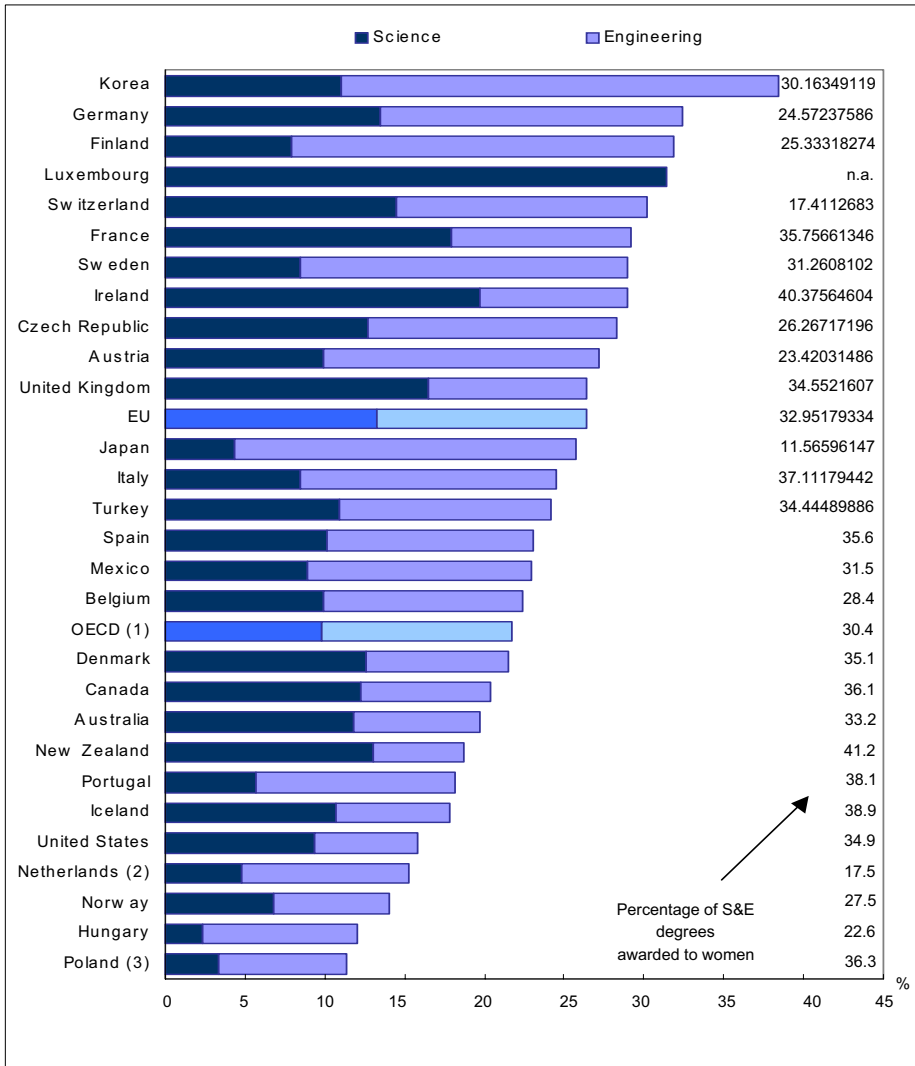
(a) Labour force status as a proportion of all males with each main field of highest educational attainment.

(b) Consists mainly of males whose highest educational attainment was Year 12 or below.

Source: ABS Education and Training Experience, Australia, 2001 (cat. no. 6278.0).

## OECD Indicators

### Science and Engineering Degrees as a percentage of new degrees 2000



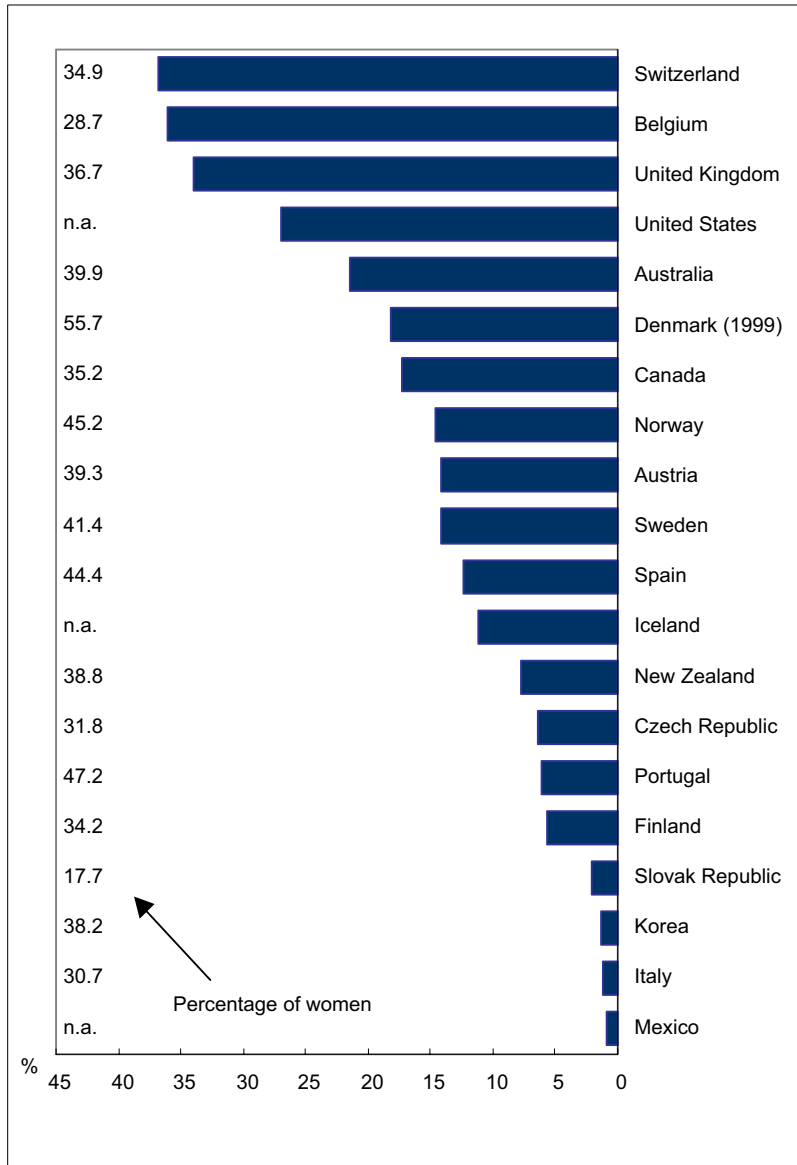
1. Average of the available countries

2. Excludes advanced research programmes

3. Excludes tertiary-A second degree programmes and advanced research programmes.

Source: OECD Science, Technology and Industry Scoreboard 2003, Towards a knowledge-based economy, OECD Education database May 2000

Foreign PhD students as a percentage of total enrolment, 2000



Source: OECD Science, Technology and Industry Scoreboard 2003, Towards a knowledge-based economy, OECD Education database May 2000

Footnotes

<sup>1</sup> ([www.abs.gov.au](http://www.abs.gov.au))